

TL
242
.5873
1983

EVALUATION OF NHTSA MODIFIED
VOLKSWAGEN RABBITS

MDB-TO-CAR SIDE IMPACT TEST OF
A 26⁰ CRABBED MOVING DEFORMABLE BARRIER
TO A 1982 VOLKSWAGEN RABBIT
AT 39.1 MPH

PREPARED BY:
VEHICLE RESEARCH AND TEST CENTER
ST. RT. 33 LOGAN COUNTY
EAST LIBERTY, OHIO 43319



FINAL REPORT
OCTOBER 1983

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
400 SEVENTH STREET, S.W.
WASHINGTON, D.C. 20590

1. Report No. DOT HS 806 507	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle EVALUATION OF NHTSA MODIFIED VOLKSWAGEN RABBITS MDB-TO-CAR SIDE IMPACT TEST OF A 26° CRABBED MOVING DEFORMABLE BARRIER TO A 1982 VOLKSWAGEN RABBIT AT 39.1 MPH		5. Report Date OCTOBER 1983	6. Performing Organization Code
		8. Performing Organization Report No. 83L93L	
7. Author(s) J. Stultz, Project Engineer, TRCO		10. Work Unit No. (TRAIS)	
9. Performing Organization Name and Address Vehicle Research and Test Center St. Rt. 33, Logan County East Liberty, Ohio 43319		11. Contract or Grant No. DTNH22-82-A-08401	
		13. Type of Report and Period Covered FINAL REPORT September 1983	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration 400 Seventh Street, S.W. Washington, DC 20590		14. Sponsoring Agency Code	
15. Supplementary Notes			
16. Abstract This test report documents one of a series of twelve crash tests to evaluate the NHTSA's Modified Volkswagen Rabbits. Testing was conducted on a baseline 1982 Volkswagen Rabbit 2-door hatchback at the TRCO Crash Test Facility, East Liberty, Ohio. The test vehicle was impacted on the left side by a moving deformable barrier, crabbled to 26°, at 39.1 mph. Occupant responses of two side impact dummies were measured. One dummy was located in the driver's designated seating position and one was located in the left rear seating position. The test date was September 30, 1983 and the ambient temperature was 67°F.			
17. Key Words Occupant Response Moving Barrier Crash Testing		18. Distribution Statement Available from: Document is available to the U.S. public through the National Technical Information Service, Springfield, Virginia 22151	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 158	22. Price

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons	0.9	metric ton	t
	(2000 lb)			
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
in ³	cubic inches	16	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	L
pt	pints	0.47	liters	L
qt	quarts	0.95	liters	L
gal	gallons	3.8	liters	L
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	degrees Fahrenheit	5/9 (after subtracting 32)	degrees Celsius	°C

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares	2.5	acres	
	(10 000 m ²)			
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	metric ton	1.1	short tons	
	(1000 kg)			
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
ml	milliliters	0.06	cubic inches	in ³
L	liters	2.1	pints	pt
L	liters	1.06	quarts	qt
L	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	degrees Celsius	9/5 (then add 32)	degrees Fahrenheit	°F

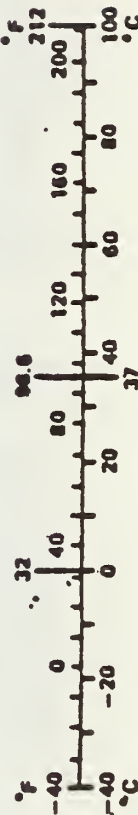


TABLE OF CONTENTS

	<u>Page</u>
1.0 PURPOSE AND INTRODUCTION	1-1
2.0 GENERAL TEST AND VEHICLE PARAMETER DATA	2-1
3.0 DATA REQUIRED BY R&D	3-1
APPENDIX A PHOTOGRAPHS	A-1
APPENDIX B DATA PLOT PRESENTATION	B-1

LIST OF PHOTOGRAPHS

<u>Figure</u>	<u>Page</u>
A-1. PRE-TEST OVERALL - VIEW 1	A-2
A-2. PRE-TEST OVERALL - VIEW 2	A-2
A-3. PRE-TEST OVERALL - VIEW 3	A-3
A-4. PRE-TEST OVERALL - VIEW 4	A-3
A-5. PRE-TEST CLOSEUP - VIEW 1	A-4
A-6. PRE-TEST CLOSEUP - VIEW 2	A-4
A-7. PRE-TEST CLOSEUP - VIEW 3	A-5
A-8. PRE-TEST DRIVER DUMMY - VIEW 1	A-5
A-9. PRE-TEST DRIVER DUMMY - VIEW 2	A-6
A-10. PRE-TEST PASSENGER DUMMY - VIEW 1	A-6
A-11. PRE-TEST PASSENGER DUMMY - VIEW 2	A-7
A-12. PRE-TEST DRIVER'S PADDING - VIEW 1	A-7
A-13. PRE-TEST DRIVER'S PADDING - VIEW 2	A-8
A-14. CRASH EVENT PHOTOGRAPH	A-8
A-15. POST-TEST OVERALL - VIEW 1	A-9
A-16. POST-TEST OVERALL - VIEW 2	A-9
A-17. POST-TEST OVERALL - VIEW 3	A-10
A-18. POST-TEST OVERALL - VIEW 4	A-10
A-19. POST-TEST CLOSEUP - VIEW 1	A-11
A-20. POST-TEST DRIVER DUMMY - VIEW 1	A-11
A-21. POST-TEST DRIVER DUMMY - VIEW 2	A-12
A-22. POST-TEST PASSENGER DUMMY - VIEW 1	A-12
A-23. POST-TEST PASSENGER DUMMY - VIEW 2	A-13
A-24. POST-TEST PASSENGER DUMMY - VIEW 3	A-13
A-25. POST-TEST PASSENGER DUMMY - VIEW 4	A-14
A-26. POST-TEST VEHICLE DAMAGE - VIEW 1	A-14

LIST OF PHOTOGRAPHS CONT'D

<u>Figure</u>	<u>Page</u>
A-27. PRE-TEST MDB FACE - VIEW 1	A-15
A-28. PRE-TEST MDB FACE - VIEW 2	A-15
A-29. POST-TEST MDB FACE - VIEW 1	A-16
A-30. POST-TEST MDB FACE - VIEW 2	A-16

SECTION 1.0

PURPOSE AND INTRODUCTION

PURPOSE

The main purpose of this test was to evaluate the NHTSA fleet of modified Volkswagen Rabbits with and without padding. The vehicle was tested using conditions not currently contained in a Federal Motor Vehicle Safety Standard.

INTRODUCTION

A stationary 1982 Volkswagen Rabbit 2-door hatchback was impacted on the left side by a Moving Deformable Barrier (MDB) on September 30, 1983. The test was to simulate an intersection collision with the striking vehicle traveling at 35 mph and the struck vehicle traveling at 17.5 mph. The orientation angle of the striking vehicle was 90° counterclockwise with respect to the longitudinal axis of the struck vehicle. The leading edge of contact was to be 37 inches forward of the vehicle center of gravity which is defined by accident investigation to be the midpoint of the wheelbase.

To simulate this collision, the MDB was to be towed into the stationary Volkswagen Rabbit at 39.1 mph with the MDB's wheels crabbed clockwise to 26° . The actual test speed was 39.1 mph and the actual leading edge was 36 inches forward of the midpoint of the Volkswagen Rabbit's wheelbase.

The vehicle was a baseline model with no structural modification. The driver door and left rear occupant wall contained three inches of padding.

Section 2 contains General Test and Vehicle Parameter Data. Section 3 contains data required by R & D. Appendix A contains pre-test and post-test vehicle and dummy photographs. Appendix B contains Data Plots.

SECTION 2.0
GENERAL TEST AND VEHICLE PARAMETER DATA

The following data sheets and photographs describe the General Test and Vehicle Parameter Data.

TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Volkswagen of America

MAKE/MODEL: Volkswagen Rabbit

VIN: 1VWBBC178CV110877

BODY STYLE: 2-Door Hatchback

MODEL YEAR: 1982

NHTSA NO.: R & D

COLOR: Burgundy

ENGINE DATA: TYPE: Transverse

CYLINDERS: 4

DISPLACEMENT 105 CID

TRANSMISSION DATA: 4 Speed Manual

DATE VEHICLE RECEIVED: 9/9/83

ODOMETER READING: 14762

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

POWER STEERING	No	AUTOMATIC TRANSMISSION	No
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	No
POWER SEATS	No	TILTING STEERING WHEEL	No
POWER WINDOWS	No	TELESCOPING STEERING WHEEL	No
TINTED GLASS	Yes	AIR CONDITIONING	Yes
RADIO	Yes	ANTI-SKID BRAKE	No
CLOCK	Yes	REAR WINDOW DEFROSTER	Yes
OTHER			

REMARKS:

1. IS THE VEHICLE STOCK THROUGHOUT? Yes
2. DOES VEHICLE SHOW EVIDENCE OF PRIOR ACCIDENT HISTORY? No
3. DOES VEHICLE SHOW ANY SIGNIFICANT CORROSION? No
4. CONDITION OF THE FRONT/REAR BUMPER AND FRAME: Good

DATA FROM CERTIFICATION LABEL ON LEFT DOOR FACE OR "B" POST:

VEHICLE MANUFACTURED BY: Volkswagen of America

DATE OF MANUFACTURE: 7/82

GVWR: 2822 LBS.,

CAWR: FRONT 1609 LBS., REAR 1278 LBS.

VEHICLE TIRE DATA

RECOMMENDED COLD TIRE PRESSURE: FRONT 27 psi; REAR 27 psi

TIRES ON VEHICLE (MFG. & LINE, SIZE): Michelin 155/R80/13

BIAS PLY, BELTED, OR RADIAL: Radial

PLY RATING: 3

IS SPARE TIRE "SPACE SAVER"? No

IS SPARE TIRE STANDARD EQUIPMENT? Yes

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (WITH MAXIMUM FLUIDS):

RIGHT FRONT 640 LBS. RIGHT REAR 330 LBS.

LEFT FRONT 670 LBS. LEFT REAR 340 LBS.

TOTAL FRONT WEIGHT 1310 LBS. (66.2 % OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 670 LBS. (33.8 % OF TOTAL VEHICLE WEIGHT)

TOTAL DELIVERED WEIGHT 1980 LBS.

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE: RF 25 1/2 ;LF 25 3/8 ;RR 25 5/16 ;LR 25 1/8

PRE-TEST ATTITUDE: RF 24 3/4 ;LF 24 3/4 ;RR 22 11/16 ;LR 22 11/16

POST-TEST ATTITUDE: RF 23 1/4 ;LF 23 9/16 ;RR 23 5/16 ;LR 22 7/8

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 157 LBS. CARGO:

RIGHT FRONT 685 LBS. RIGHT REAR 560 LBS.

LEFT FRONT 685 LBS. LEFT REAR 555 LBS.

TOTAL FRONT WEIGHT 1370 LBS. (55.1 % OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 1115 LBS. (44.9 % OF TOTAL VEHICLE WEIGHT)

TOTAL TEST WEIGHT 2485 LBS.

WEIGHT OF BALLAST SECURED IN VEHICLE TRUNK AREA: 0 LBS.

TEST FLUID DATA

TEST FLUID TYPE: RED STUDDARD SOLVENT #2; SPEC. GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

"USEABLE" CAPACITY*: NA GALLONS

TEST VOLUME: 3.0 GALLONS

FUEL SYSTEM CAPACITY (DATA FROM OWNERS MANUAL): 15.0 GALLONS

DETAILS OF FUEL SYSTEM: DNA

ELECTRIC FUEL PUMP: Yes

FUEL INJECTION: Yes

DOES ELECTRIC FUEL PUMP OPERATE WITH IGNITION SWITCH "ON" AND THE ENGINE NOT OPERATING? No

DATA FROM "RECOMMENDED TIRE PRESSURE" LABEL ON DOOR, POST, GLOVEBOX, ETC.

VEHICLE LOAD (UP TO CAPACITY): FRONT 27 psi; REAR 27 psi

RECOMMENDED TIRE SIZE: 155 R80 13 LOAD RANGE X B, C,

VEHICLE CAPACITY: TYPES OF SEATS: Front - Bucket
Rear - Bench

NUMBER OF OCCUPANTS (DESIGNATED SEATING CAPACITY): 2 FRONT

2 REAR

CARGO LOAD 135 LBS.

4 TOTAL

TOTAL 735 LBS.

*WITH ENTIRE FUEL SYSTEM FILLED WITH FUEL TANK THROUGH CARBURETOR BOWL.

TEST CONDITIONS

TEST NUMBER: 830930

DATE OF TEST: September 30, 1983

TIME OF TEST: 10:25

WIND VELOCITY: 0-2 mph 288° NW

HUMIDITY: NA

AMBIENT TEMPERATURE AT IMPACT AREA: 67° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 72° F

SUBJECT VEHICLE DATA

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE TEST WEIGHT (LBS.)	2485	2463
MDB TEST WEIGHT (LBS.)	2990	3000
MDB VELOCITY (MPH)*	39.1	39.1
IMPACT POINT (INCHES)**	36.	37

DUMMIES

	<u>DRIVER</u>	<u>MIDDLE PASSENGER</u>	<u>RT. FRONT PASSENGER</u>	<u>LEFT REAR PASSENGER</u>	<u>RT. REAR PASSENGER</u>
TYPE:	SID			SID	
SERIAL NO.:	C6			UG2	
INSTRUMENTATION:					
HEAD ACCEL.:	Yes			Yes	
CHEST ACCEL.:	Yes (Upper/Lower)			Yes (Upper/Lower)	
FEMUR L.C.'S:	No			No	
OTHER:	Pelvis/Ribs			Pelvis/Ribs	

RESTRAINT SYSTEM: Both dummies were unrestrained

* As measured over final one foot of travel.

** As measured forward of the midpoint of the Volkswagen's wheelbase.

GENERAL TEST AND VEHICLE PARAMETER DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #	PASSENGER #
Head	<u>Side window and sill</u>	<u>Side header padding & window</u>
Chest	<u>Padding</u>	<u>Padding</u>
Abdomen	<u>Padding</u>	<u>Padding</u>
Left Knee	<u>Padding</u>	<u>Left quarter panel</u>
Right Knee	<u>Left knee</u>	<u>Left knee</u>

DOOR OPENING:

	LEFT	RIGHT
Front	<u>Tools required</u>	<u>Easy</u>
Rear	<u>DNA</u>	<u>DNA</u>

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
Front	<u>No</u>	<u>Left Front shifted 3"</u>
Rear	<u>No</u>	<u>No</u>

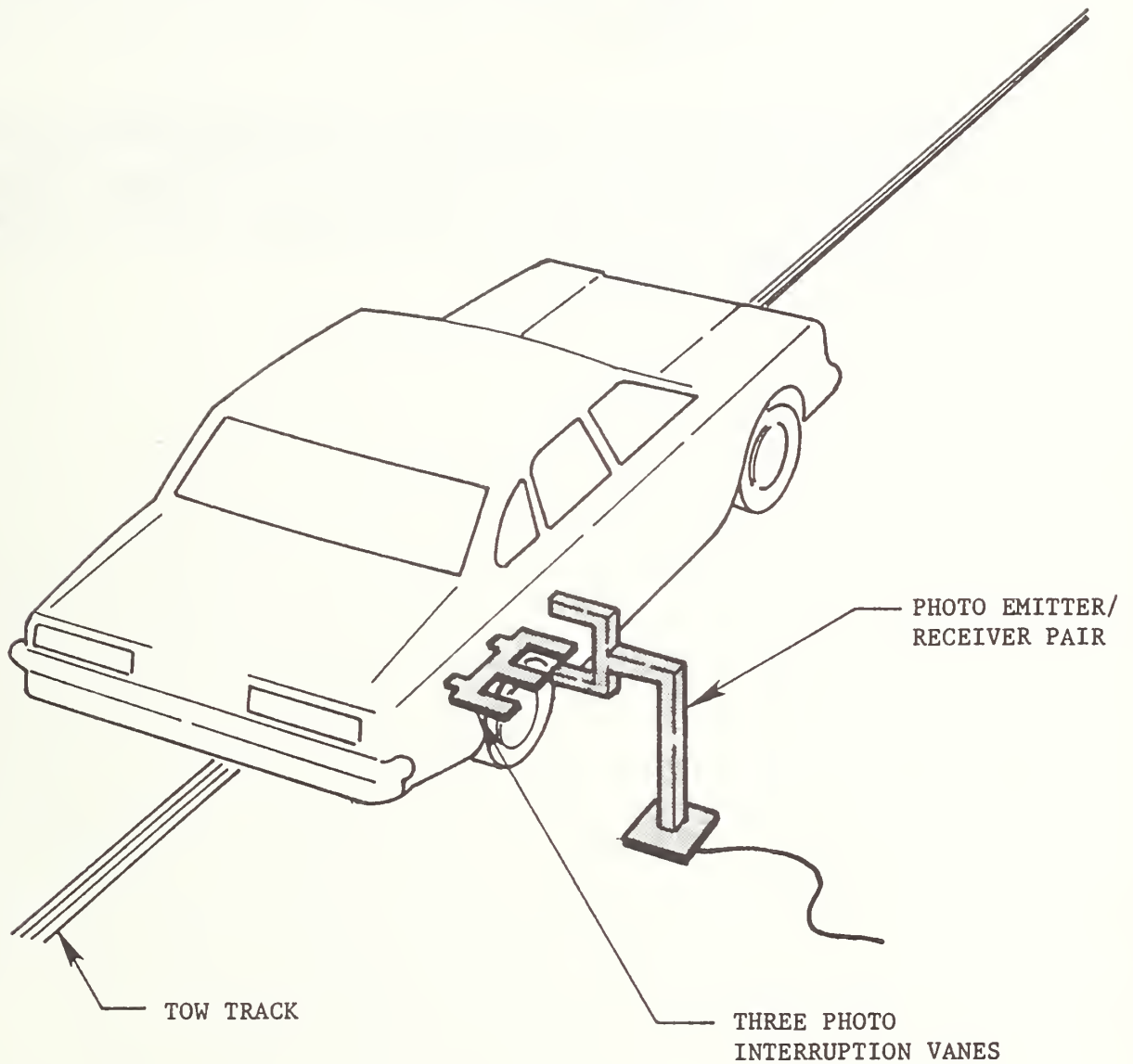
GLAZING DAMAGE:

Left edge of windshield cracked, both driver's
side window and left rear passenger window
shattered

OTHER NOTABLE IMPACT EFFECTS:

Approximately 8 inches of sill torn loose at
front seat area, A-pillar split from sill.

IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane is located two inches before impact.

The vanes have one foot spacing.

VEHICLE TEST WEIGHT CALCULATION

$$\begin{aligned}\text{Test Weight} &= \text{Unloaded Delivered Weight} + \\ &\quad \text{Number of Dummies} \times 174 \text{ lbs.} + \\ &\quad \text{Cargo Weight} \\ &= 1980 + 2 \times 174 + 135 \text{ lbs.} \\ &= 2463 \text{ lbs.}\end{aligned}$$

To achieve test weight, the exhaust system and starter motor were removed and 3 gallons of Stoddard Solvent was added in the fuel tank. The weight of the test vehicle was measured by placing each wheel on a Loadmeter Corporation Hiway Loadometer.

TEST ANOMALIES

1) Cable separation occurred in data channel T01XG1 (Driver Upper Spine Acceleration X Axis) at approximately 320 msec. Because the separation occurred late in the crash, the test results are unaffected by it.

2) Cable separation occurred in data channel LFDYG2 {Left Front Door (Position 8) Acceleration Y Axis} within the first 10 msec. No peak values or Delta Velocities are reported.

SECTION 3.0
DATA REQUIRED BY R&D

The following pages are included in this section:

1. Dummy temperature control and positioning data
2. Dummy kinematic summary
3. Vehicle crush data
4. Dummy and vehicle accelerometer location and data summary
5. High speed camera information
6. Transducer information

DUMMY TEMPERATURE CONTROL AND POSITIONING

The vehicle was kept inside the temperature controlled crash test building until approximately 2 hours prior to the test. Temperature inside the vehicle and ambient temperature at the crash area were recorded. Dummy temperature while outside the crash test building was maintained portably until approximately 1 minute prior to the test.

The following table summarizes the steps taken to position the instrumented, calibrated dummies in the test vehicle.

DUMMY PLACEMENT AND POSITIONING

SIDE IMPACT DUMMY*

DRIVER DSP

HEAD	Surface of transverse instrument mounting platform is as horizontal as possible without inducing torso movement & midsagittal plane falls in longitudinal plane.
UPPER TORSO	Placed against seat back. Midsagittal plane is vertical and centered on bucket seat.
LOWER TORSO	Midsagittal plane is vertical and centered on bucket seat.
UPPER LEGS (thighs or femurs)	Placed against seat cushion. Planes defined by femur and tibia centerlines are as close as possible to vertical.
KNEES	Knees set 14.5" apart between pivot bolt head outer surfaces. Outer surface of right knee pivot bolt is 8.6" from midsagittal plane of dummy. Outer surface of left knee pivot bolt is 5.9" from midsagittal plane of dummy.
LOWER LEGS	Plane defined by femur and tibia centerlines are as close as possible to vertical longitudinal plane.
RIGHT FOOT	Placed on undepressed accelerator pedal -- rearmost point of heel on floorplan in plane of pedal.
LEFT FOOT	Placed on toeboard -- rearmost point of heel on floorpan as close as possible to intersection of toeboard and floorpan. Centerline falls in vertical longitudinal plane.

REAR PASSENGER DSP

Surface of transverse instrument mounting platform is as horizontal as possible without inducing torso movement & midsagittal plane falls in longitudinal plane.

Placed against seat back. Midsagittal plane is vertical and contained in the same longitudinal plane as the driver's midsagittal plane.

Midsagittal plane is vertical and contained in the same longitudinal plane as the driver's midsagittal plane.

Placed against seat cushion. Planes defined by femur and tibia centerlines are as close as possible to vertical.

Located so that planes defined by femur and tibia centerlines are as close as possible to vertical.

Plane defined by femur and tibia centerlines are as close as possible to vertical longitudinal plane.

Centerline falls in vertical longitudinal plane. Placed on floor as far forward as possible without front seat interference.

Centerline falls in vertical longitudinal plane. Placed on floor as far forward as possible without front seat interference.

*NOTE: THE SIDE IMPACT DUMMY DOES NOT INCLUDE ARMS.

DUMMY IN-VEHICLE POSITION RECORDING SHEET

VEHICLE NHTSA NO. R&D

MFR./MAKE/MODEL: Volkswagen Rabbit

FRONT SEAT TYPE: BENCH
X BUCKET
SPLIT BENCH

ADJUSTER TYPE: X MANUAL
POWER

BUCKET SEAT BACK TYPE: FIXED
X ADJUSTABLE

TECHNICIANS:

1. J. Kokoruda

2. M. Garrison

3. D. LeVally

POSITIONING DATE: 9/30/83

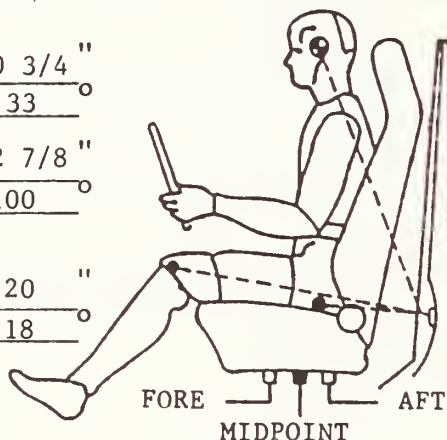
AMBIENT TEMP.: 69° F. TIME: 5:30

DRIVER DUMMY # 06

HEAD 20 3/4"
 TARGET* 33°

KNEE 32 7/8"
 JOINT 100°

APPROX.
 "H" 20"
 POINT 118°

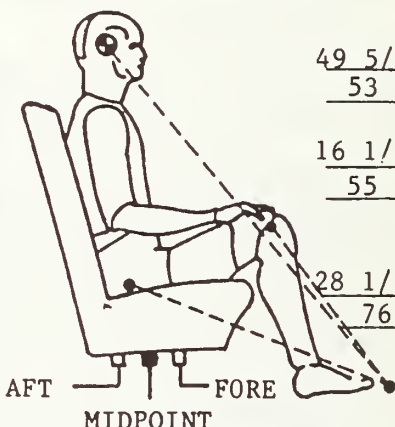


REAR PASSENGER DUMMY # U02

49 5/16" HEAD
53° TARGET**

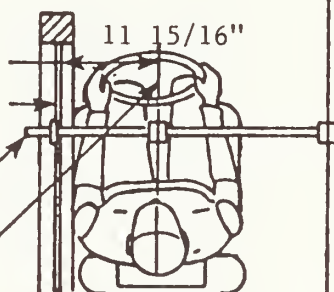
16 1/2" KNEE
55° JOINT

APPROX.
28 1/2" "H"
76° POINT



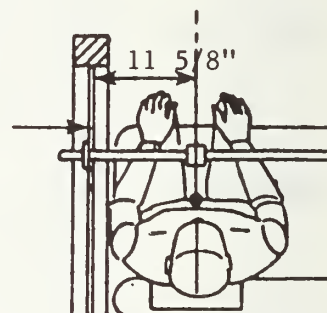
DOOR
 GLASS
 HEIGHT*** 9 1/2"

LATERAL BAR
 ADJUSTABLE
 POINTER



DRIVER
 DUMMY # 06

DOOR
 GLASS
 HEIGHT DNA

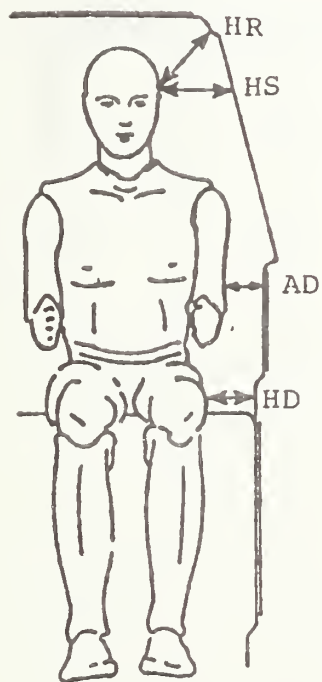
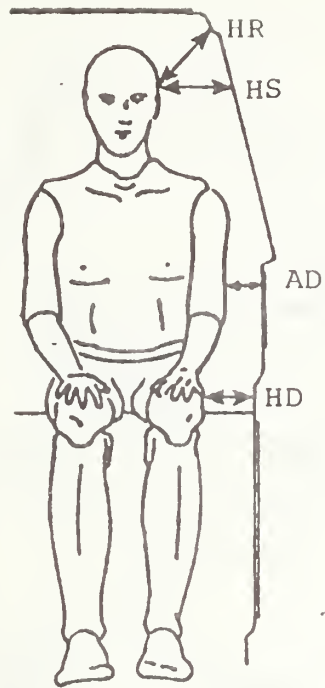


PASSENGER
 DUMMY # U02

*All driver dummy dimensions referenced to top of striker bolt and all angles referenced to vertical.

**All passenger dummy dimensions referenced to front seat back latch bolt with front seat in mid-position and all angles referenced to vertical.

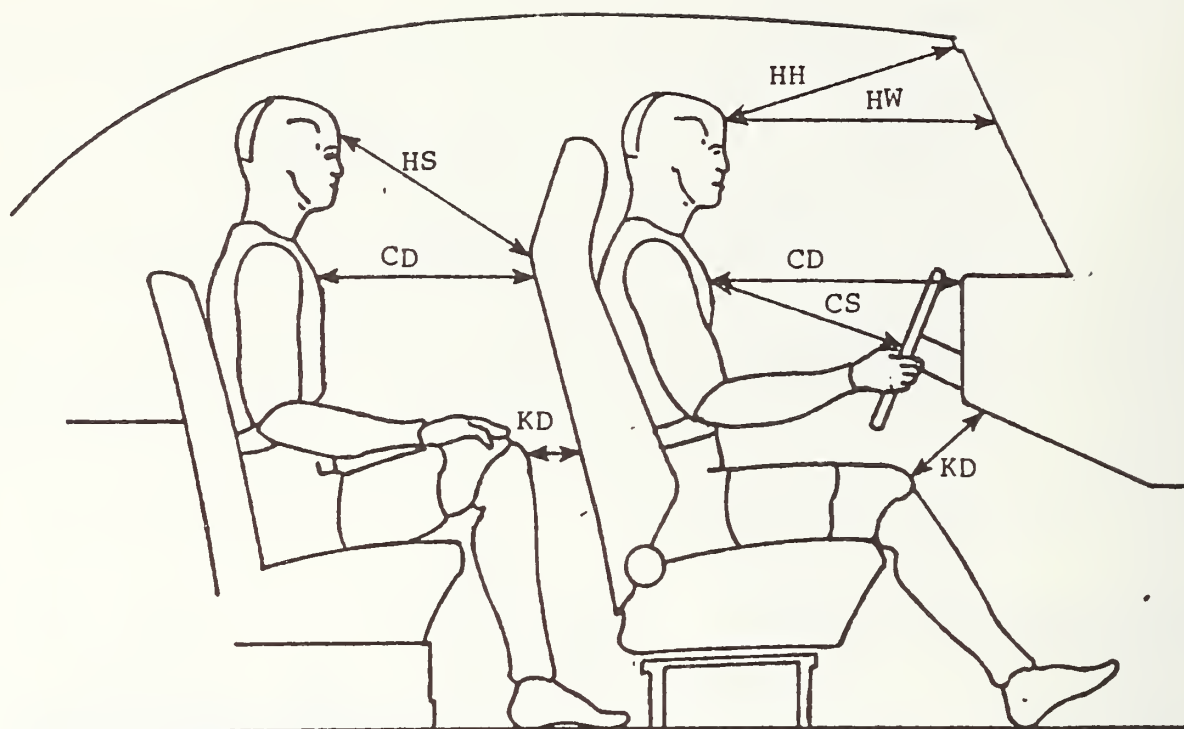
***Door glass height is equal on the right and left side of vehicle at dummy nose level.



	06 DRIVER	002 PASSENGER
HR	5 7/8	4 11/16
HS	7 5/8	7 7/8
AD	0	1/2
HD	2 3/8	1 3/4

NOTE: ALL MEASUREMENTS IN INCHES

DUMMY LATERAL CLEARANCE DIMENSIONS



	06 DRIVER	U02 PASSENGER
HH	12 1/4	DNA
HW	19 1/2	DNA
HS	DNA	24
CD	20 1/8	17 13/16
CS	11 3/8	DNA
KDL	3 5/8	4 1/4
KDR	3 13/16	4 1/4

NOTE: ALL MEASUREMENTS IN INCHES

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

DUMMY KINEMATIC SUMMARY

DRIVER

During impact, the dummy's torso contacted the padded driver's door and the head passed through the already shattered driver's window and then struck the window sill. The dummy rebounded across the front seats. It's buttocks struck and passed through the front passenger's window sill and it's head and back struck the roof. The dummy came to rest sitting on the front passenger's window sill with it's head wedged between the front bucket seat's head restraints.

PASSENGER

During impact, the dummy's torso contacted the padded left rear occupant side wall and the head contacted the side window and side header padding. The dummy remained upright throughout the entire crash event with it's feet trapped in the left rear passenger foot well.

VEHICLE EXTERIOR PROFILES AND STATIC CRUSH

ZERO DISTANCE AT PROJECTED IMPACT POINT*

LOCATION	HEIGHT (in)	6	0	6	12	18	24	30	36	42	48	54	60	66	72	78
PRE-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)																
Axle Height	8.6	X	X	20.6	20.5	20.4	20.4	20.5	20.4	20.5	20.5	20.6	20.8	21.1	X	X
H-Point	16.4	X	X	18.1	18.1	18.1	18.1	18.0	18.0	18.0	18.1	18.3	18.3	18.3	X	X
Mid Door	23.9	16.5	18.0	17.9	17.8	17.8	17.7	17.7	17.7	17.8	17.8	17.8	17.9	17.9	18.1	16.6
Window Sill	33.0	X	19.8	19.5	19.3	19.3	19.3	19.3	19.2	19.3	19.3	19.3	19.4	19.5	19.6	19.8
Window Top	51.5	X	X	X	X	X	28.0	26.8	26.5	26.4	26.4	26.4	26.6	26.8	27.1	28.1

POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)

Axle Height	8.6	X	X	30.9	32.3	31.6	31.3	31.4	31.4	31.6	31.3	30.5	27.6	24.9	X	X
H-Point	16.4	X	X	32.5	34.9	35.5	35.4	35.4	35.3	35.1	35.1	35.1	33.2	30.9	X	X
Mid Door	23.9	24.6	26.5	30.1	32.1	32.2	32.4	32.6	32.8	32.8	32.9	34.1	32.9	31.8	28.3	23.4
Window Sill	33.0	X	23.3	24.9	30.6	30.9	31.4	31.9	32.1	32.4	32.6	33.1	33.0	31.4	27.2	23.4
Window Top	51.5	X	X	X	X	X	31.0	29.8	29.2	29.1	28.9	28.9	28.6	28.5	28.6	29.2

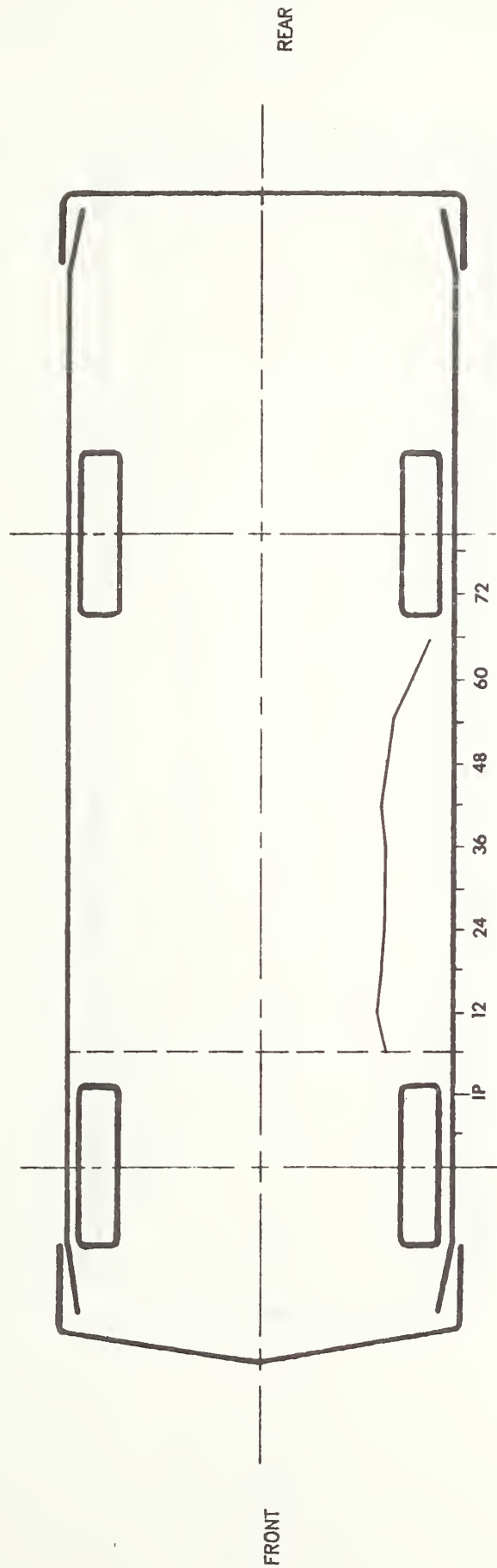
STATIC CRUSH (IN)

Axle Height	8.6	X	X	10.3	11.8	11.2	10.9	10.9	11.0	11.1	10.8	9.9	6.8	3.8	X	X
H-Point	16.4	X	X	14.4	16.8	17.4	17.3	17.4	17.3	17.1	17.0	16.8	14.9	12.6	X	X
Mid Door	23.9	8.1	8.5	12.2	14.3	14.4	14.7	14.9	15.1	15.0	15.1	16.3	15.0	13.9	10.2	6.8
Window Sill	33.0	X	3.5	5.4	11.3	11.6	12.1	12.6	12.9	13.1	13.3	13.8	13.6	11.9	7.6	3.6
Window Top	51.5	X	X	X	X	X	3.0	3.0	2.7	2.7	2.5	2.5	2.0	1.7	1.5	1.1

* Projected impact point is 37 inches forward of driver's side wheelbase midpoint. Column readings are front to rear from left to right.

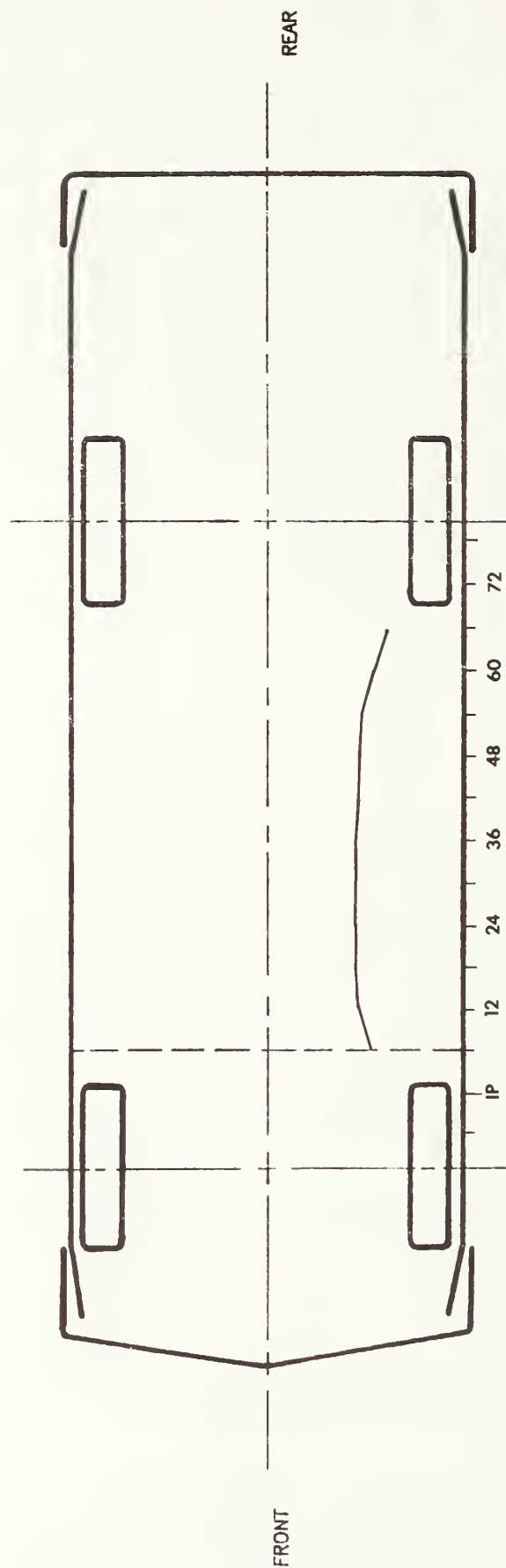
** Reference plane is parallel to and 48 inches from the vehicle longitudinal centerline.

VEHICLE EXTERIOR STATIC CRUSH PROFILE



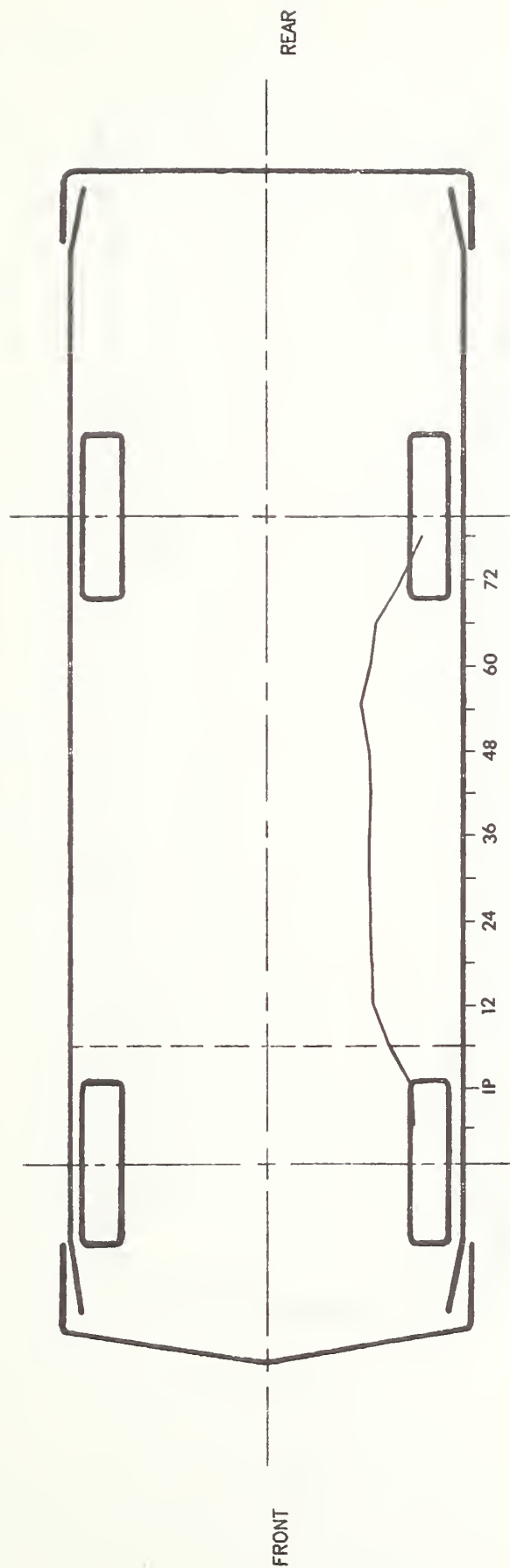
PROFILE LEVEL EQUALS AXLE HEIGHT
IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



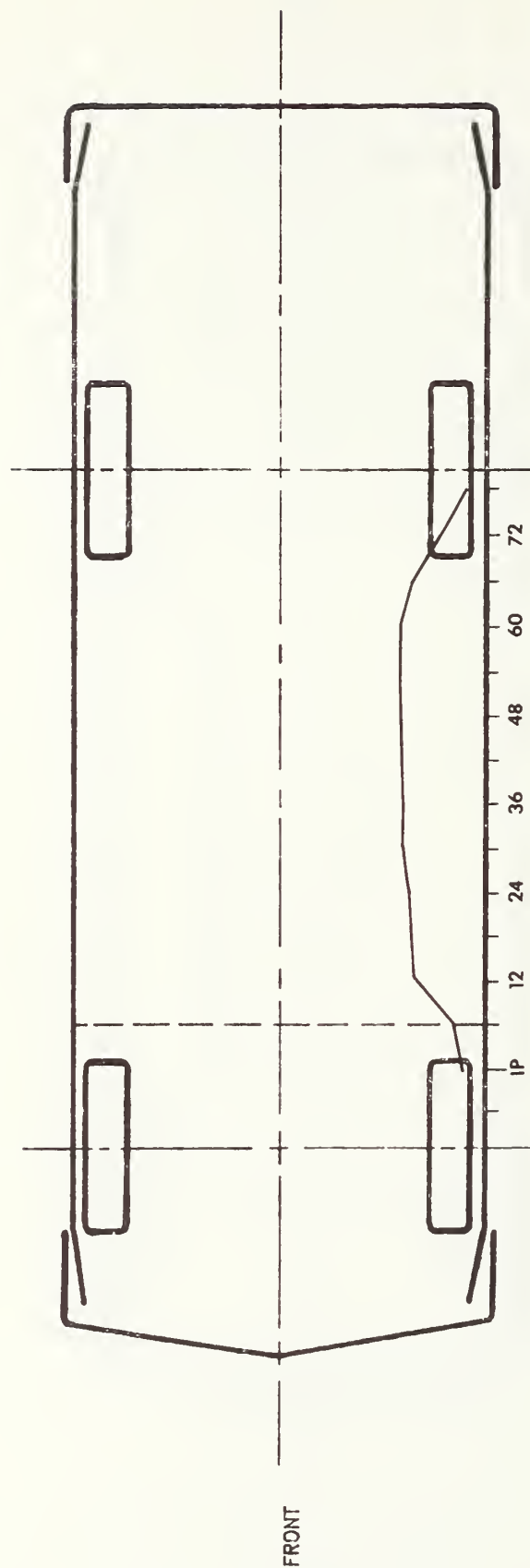
PROFILE LEVEL EQUALS H-POINT HEIGHT
 IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



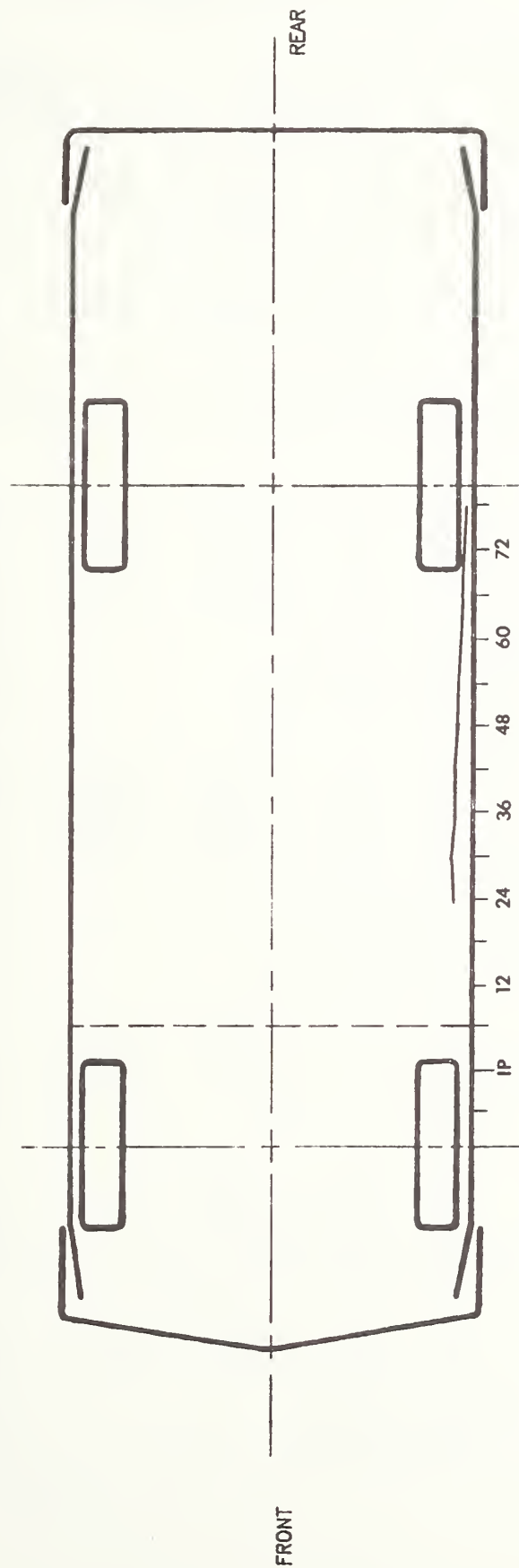
PROFILE LEVEL EQUALS MID-DOOR HEIGHT
IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS WINDOW SILL HEIGHT
 IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS WINDOW TOP HEIGHT
 IP EQUALS PROJECTED IMPACT POINT

SIDE IMPACT DUMMY DATA SUMMARY

	DRIVER DUMMY				PASSENGER DUMMY			
	POSITIVE		NEGATIVE		POSITIVE		NEGATIVE	
	DIRECTION*		DIRECTION**		DIRECTION*		DIRECTION**	
	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
HEAD ACCELERATION								
LONGITUDINAL	28.99	164.00	89.51	75.38	22.98	129.88	28.25	52.50
LATERAL	73.93	75.25	21.56	163.63	117.49	48.38	12.62	134.38
VERTICAL	8.62	163.13	68.93	54.00	31.89	65.13	26.76	38.00
RESULTANT		123.63	à 75.38			120.79	à 48.38	
HIC	944.35	from 35.63 to 80.00			1012.15	from 44.88 to 55.00		
CHEST ACCELERATION								
UPPER SPINE								
LONGITUDINAL	25.22	46.88	27.73	54.38Y	6.38	145.00	21.86	56.25
LATERAL (P)***	114.32	33.13	63.10	52.50	56.59	41.25	6.05	136.88
LATERAL (R)***	116.11	32.50	62.63	52.50	58.53	41.25	6.24	138.13
VERTICAL	17.10	50.00	13.56	68.75	12.50	25.63	16.50	56.25
RESULTANT (P)		115.14	à 33.13Y			60.12	à 41.25	
RESULTANT (R)		116.85	à 33.13Y			61.95	à 41.25	
DELTA V (MPH)****		35.2	à 48.75 (P)			25.9	à 128.13 (P)	
		36.4	à 48.75 (R)			26.2	à 127.50 (R)	
LOWER SPINE								
LONGITUDINAL	43.25	40.63	32.91	52.50	12.18	42.50	32.88	30.00
LATERAL (P)	135.51	24.38	40.41	51.88	85.41	30.00	28.39	57.50
LATERAL (R)	135.45	24.38	50.83	51.88	86.38	30.62	27.45	57.50
VERTICAL	27.40	30.62	7.76	68.75	19.52	36.88	5.32	97.50
RESULTANT (P)		135.73	à 24.38			92.00	à 30.00	
RESULTANT (R)		135.67	à 24.38			92.82	à 30.62	
DELTA V (MPH)		40.7	à 41.25 (P)			33.1	à 51.25 (P)	
		41.7	à 41.87 (R)			33.9	à 51.25 (R)	
LEFT UPPER RIB								
LATERAL (P)	100.67	28.75	12.92	65.63	56.02	25.63	5.58	146.25
LATERAL (R)	103.59	20.00	14.30	61.25	57.80	25.63	5.17	82.50
DELTA V (MPH)		31.9	à 58.75 (P)			29.8	à 135.00 (P)	
		32.3	à 58.75 (R)			31.2	à 137.50 (R)	
LEFT LOWER RIB								
LATERAL (P)	110.04	19.38	78.65	56.87	68.51	33.75	14.19	56.87
LATERAL (R)	118.67	19.38	75.91	56.87	65.82	24.38	12.95	56.25
DELTA V (MPH)		34.3	à 54.38 (P)			30.9	à 53.75 (P)	
		34.6	à 54.38 (R)			29.7	à 53.75 (R)	
PELVIS ACCELERATION								
LONGITUDINAL	12.57	59.50	280.43	85.13°	9.03	94.25	75.18	27.13
LATERAL	191.61	23.50	30.61	41.75°	182.21	28.50	8.47	72.75
VERTICAL	36.55	26.88	114.57	74.38°	39.62	31.00	7.89	94.63
RESULTANT		282.64	à 85.38°			186.34	à 28.50	
DELTA V (MPH)		37.2	à 55.88°			30.9	à 57.13	

SIDE IMPACT DUMMY DATA SUMMARY CONTD

	<u>DRIVER DUMMY</u>				<u>PASSENGER DUMMY</u>			
	<u>POSITIVE</u>		<u>NEGATIVE</u>		<u>POSITIVE</u>		<u>NEGATIVE</u>	
	<u>DIRECTION*</u>		<u>DIRECTION**</u>		<u>DIRECTION*</u>		<u>DIRECTION**</u>	
	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>
	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>
RIB DEFLECTION †	0.04	210.00	1.80	50.88	0.04	6.50	1.56	54.38

* LONGITUDINAL: FORWARD
 LATERAL: RIGHTWARD
 VERTICAL: UPWARD

**LONGITUDINAL: REARWARD
 LATERAL: LEFTWARD
 VERTICAL: DOWNWARD

*** (P) = Primary Sensor, (R) = Redundant Sensor

**** For dummy channels, Delta V is the velocity change at the approximate time of separation from the contact area.

† Compression: Negative

‡ See TEST ANOMALIES

° The CTM has judged that intermittent rattling has occurred in these channels and, therefore, the peak values reported are questionable as are applicable resultants and Delta V's.

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

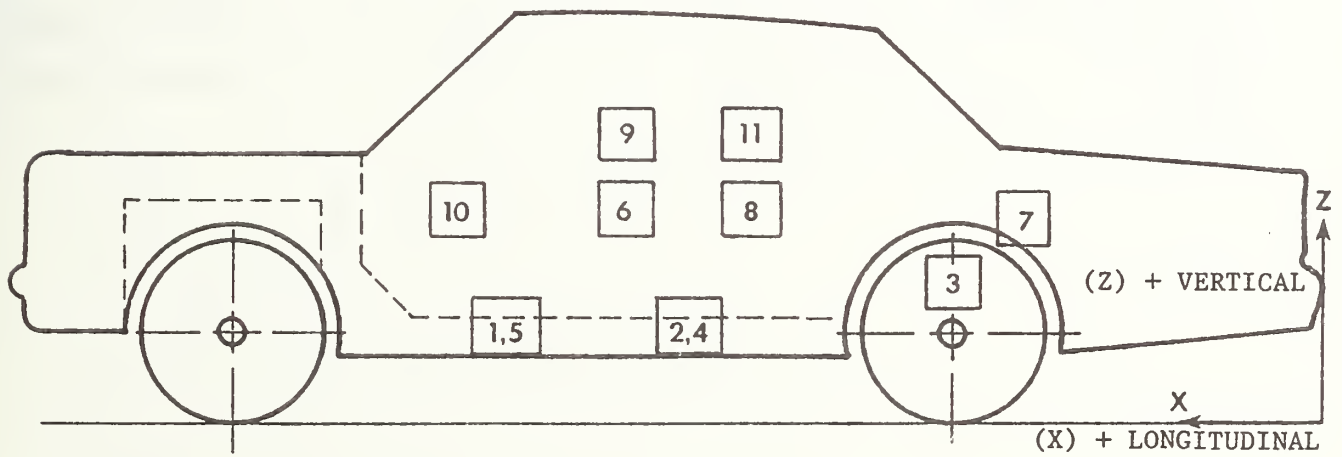
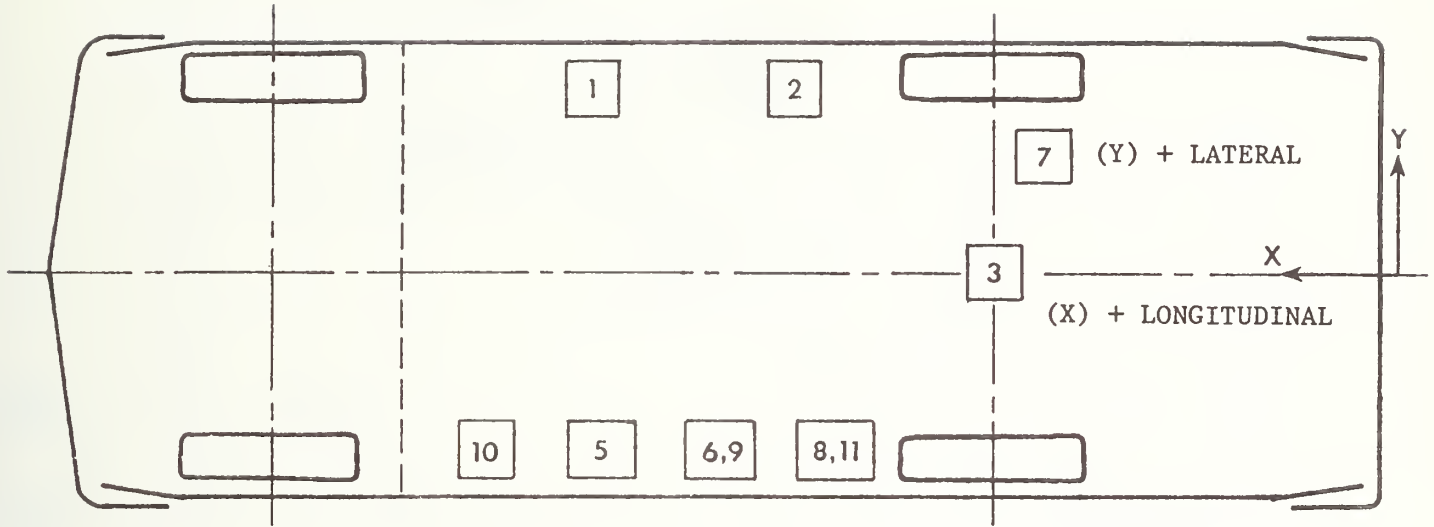
NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	RIGHT SILL AT FRONT SEAT (LONGITUDINAL)	83.3	23.4	10.5				
	(LATERAL)				ΔV = -1.7 mph @ 100.00 msec	4.87	63.88	8.18
	(VERTICAL)				ΔV = 18.1 mph @ 100.00 msec	21.10	34.50	2.66
	(RESULTANT)					6.45	64.25	14.67
							24.76 @ 33.63	33.13
2	RIGHT SILL AT REAR SEAT (LONGITUDINAL)	61.3	23.6	9.0				
	(LATERAL)				ΔV = -0.1 mph @ 100.00 msec	4.81	64.00	7.62
	(VERTICAL)				ΔV = 21.1 mph @ 100.00 msec	24.08	35.25	3.03
	(RESULTANT)					6.58	53.50	10.07
							25.85 @ 35.00	34.00
3	REAR DECK OVER AXLE (LONGITUDINAL)	32.0	0.0	7.1				
	(LATERAL)				ΔV = -3.1 mph @ 100.00 msec	6.17	35.00	15.53
	(VERTICAL)				ΔV = 25.8 mph @ 100.00 msec	23.78	21.13	2.55
	(RESULTANT)					8.95	35.75	11.08
							29.51 @ 20.25	20.13
4	LEFT SILL AT REAR SEAT (LATERAL)	61.0	-23.6	9.0				
					ΔV = 18.6 mph @ 39.25 msec	45.05	24.63	33.42
5	LEFT SILL AT FRONT SEAT (LATERAL)	83.6	-23.3	10.5				
					ΔV = 8.8 mph @ 10.00 msec	54.40	10.13	58.49
6	LEFT FRONT DOOR CENTERLINE (LATERAL)	80.8	-25.4	23.3				
					ΔV = 17.5 mph @ 15.13 msec	124.12	11.88	94.60
7	RIGHT REAR COMPARTMENT (LONGITUDINAL)	31.0	15.4	13.9				
						4.23	33.00	10.04
8	MIDREAR OF LEFT FRONT DOOR (LATERAL)	60.4	-25.0	23.8				
						---	--- Y	---
9	UPPER LEFT FRONT DOOR CENTERLINE (LATERAL)	81.8	-25.4	32.6				
					ΔV = 21.6 mph @ 16.13 msec	231.31	17.13	161.61
10	MIDFRONT OF LEFT FRONT DOOR (LATERAL)	98.9	-25.8	22.8				
					ΔV = 23.6 mph @ 17.00 msec	136.48	7.25	64.97
11	UPPER REAR OF LEFT FRONT DOOR (LATERAL)	70.8	-25.5	32.6				
					ΔV = 17.6 mph @ 18.25 msec	116.24	19.25	129.92
								24.00

* Reference: X - Rear Bumper (+ Forward), Y - Vehicle Centerline (+ To Right),
Z - Ground Level (+ Up)

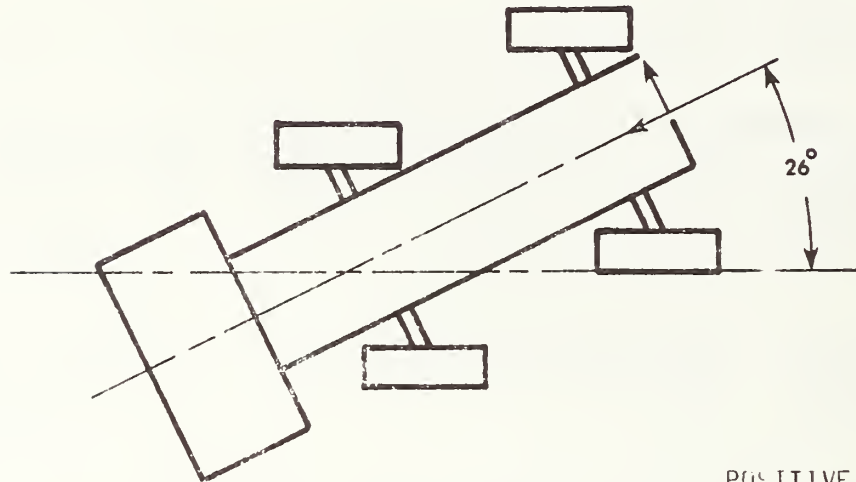
All measurements of accelerometer locations in inches.

YSee TEST ANOMALIES

VEHICLE ACCELEROMETER LOCATIONS



MOVING BARRIER ACCELEROMETER LOCATIONS AND DATA SUMMARY



NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	CENTER OF GRAVITY	74.5	0.0	11.5				
	(LONGITUDINAL)	$\Delta V = -18.5 \text{ mph } \Delta 100.00 \text{ msec}$			0.99	159.63	17.94	38.00
	(LATERAL)	$\Delta V = -5.0 \text{ mph } \Delta 100.00 \text{ msec}$			1.12	73.25	9.03	39.88
	(VERTICAL)				17.49	68.00	13.40	60.13
	(RESULTANT)					20.89 Δ	38.00	
2	FRONT FRAME MEMBER	130.3	0.0	11.3				
	(LONGITUDINAL)	$\Delta V = -17.1 \text{ mph } \Delta 100.00 \text{ msec}$			0.64	247.88	17.07	37.38
3	REAR FRAME MEMBER	23.3	0.0	11.5				
	(LONGITUDINAL)	$\Delta V = -17.0 \text{ mph } \Delta 100.00 \text{ msec}$			1.37	152.00	16.63	36.88

* Reference: X - Rear Most Point of Frame (+ To Forward), Y - Barrier Centerline (+ To Right), Z - Ground Level (+ To Up)

All measurements of accelerometer locations in inches.

HIGH SPEED CAMERA INFORMATION

CAMERA NO.	LOCATION	TYPE	LENS (mm)	SPEED (fps)	PURPOSE OF CAMERA DATA
1	Overhead	Photosonics 1B	8	792.5	Vehicle Dynamics
2	Overhead	Photosonics 1B	25	732.5	Close-up of Impact Point
3	Onboard MDB	Stalex	25	500	Close-up of Impact Point
4	Onboard MDB	Photosonics 1B	13	1002	Driver Kinematics
5	Ground Level - Right	Hycam	25	845	Overall View
6	Ground Level - Left	Photosonics 1B	17	810	Overall View
7	Onboard Vehicle	Photosonics 1B	8	812	Driver Kinematics - Front View
8	Onboard Vehicle	Photosonics 1B	8	800	Driver Kinematics
9	Onboard Vehicle	Photosonics 1B	8	800	Passenger Kinematics

NOTE: CAMERAS ARE NUMBERED ACCORDING TO SPLICING SEQUENCE OF FILM.
 (24 fps) REAL TIME MOVIE FILM COVERAGE OF PRE-CRASH, POST-CRASH
 AND CRASH EVENT SPLICED AT START AND END OF FILM.

LOCATIONS OF OFFBOARD HIGH SPEED CAMERAS

CAMERA NO.	X	Y	Z
1	0	0	25'
2	0	0	25'
5	24'10"	58'8"	45"
6	-20'11"	-13'	45"

Origin of Coordinate System is Point of Impact

+X = Forward with Respect to Striking Vehicle's Velocity Vector
+Y = Rightward with Respect to Striking Vehicle's Velocity Vector
+Z = Upward with Respect to Striking Vehicle's Velocity Vector

NON-GOVERNMENT FURNISHED TRANSDUCER INFORMATION

PARAMETER BEING MEASURED	TYPE OF TRANSDUCER	MODEL NUMBER	SERIAL NUMBER	MFGR.	DATE OF LAST CALIBRATION	SENSITIVITY	DESIRED FULL SCALE (ENGR. UNITS)
BOGXG	Accel	4-202-0001	18845	Bell Howell	8/9/83	.236 MV/G	50 G
BOGYG	Accel	4-202-0001	18858	Bell Howell	8/9/83	.2385 MV/G	50 G
BOGZG	Accel	4-202-0001	18857	Bell Howell	8/9/83	.2385 MV/G	50 G
BFCXG	Accel	4-202-0001	18240	Bell Howell	8/9/83	.2385 MV/G	50 G
BRCXG	Accel	4-202-0001	19022	Bell Howell	8/9/83	.221 MV/G	50 G

All dummy and struck vehicle accelerometers were Government Furnished Equipment and were Endevco 2264 Accelerometers.



APPENDIX A
PHOTOGRAPHS

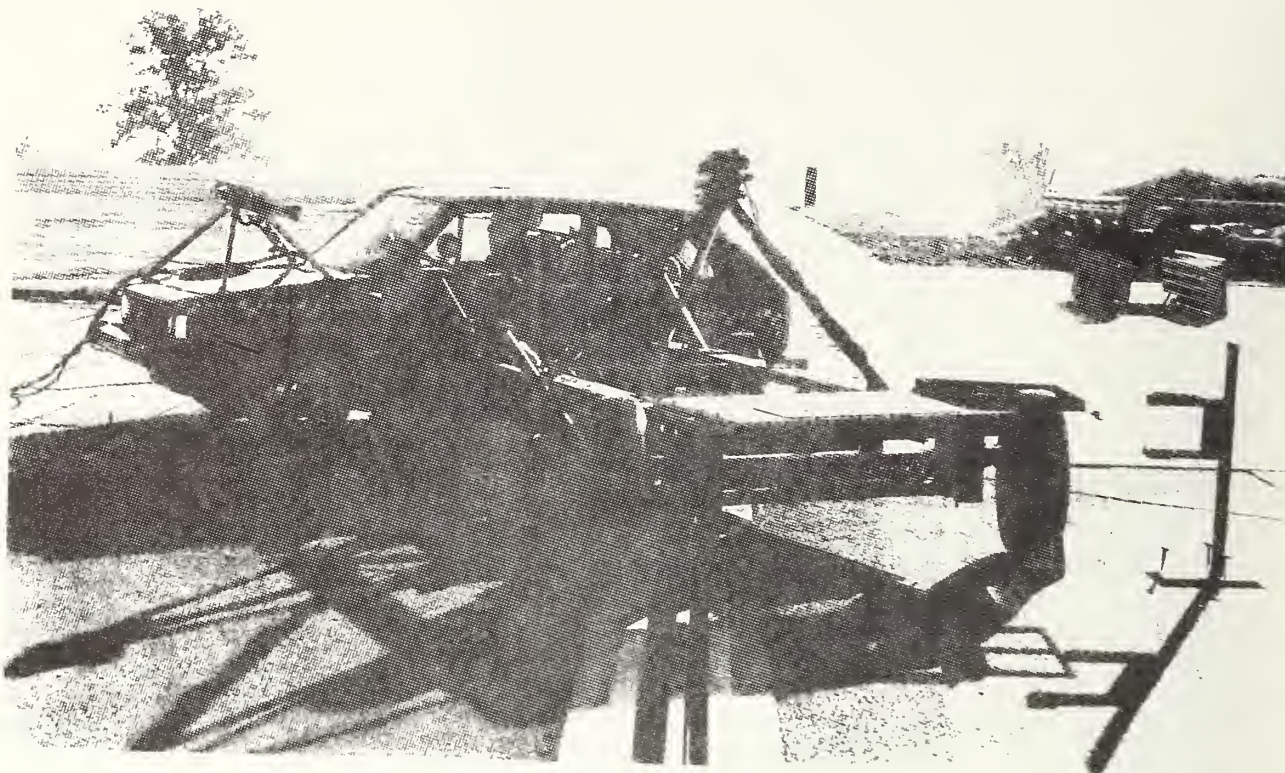


Figure A-1. PRE-TEST OVERALL - VIEW 1

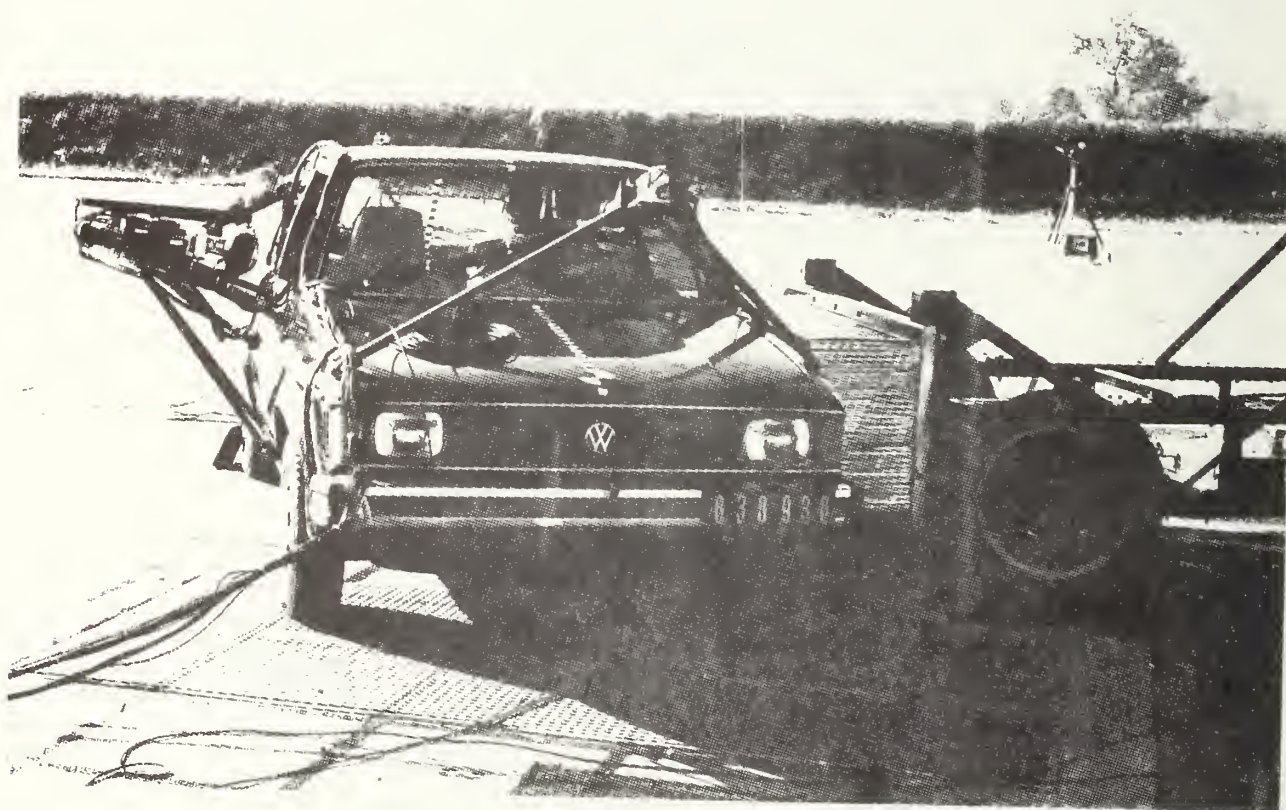


Figure A-2. PRE-TEST OVERALL - VIEW 2

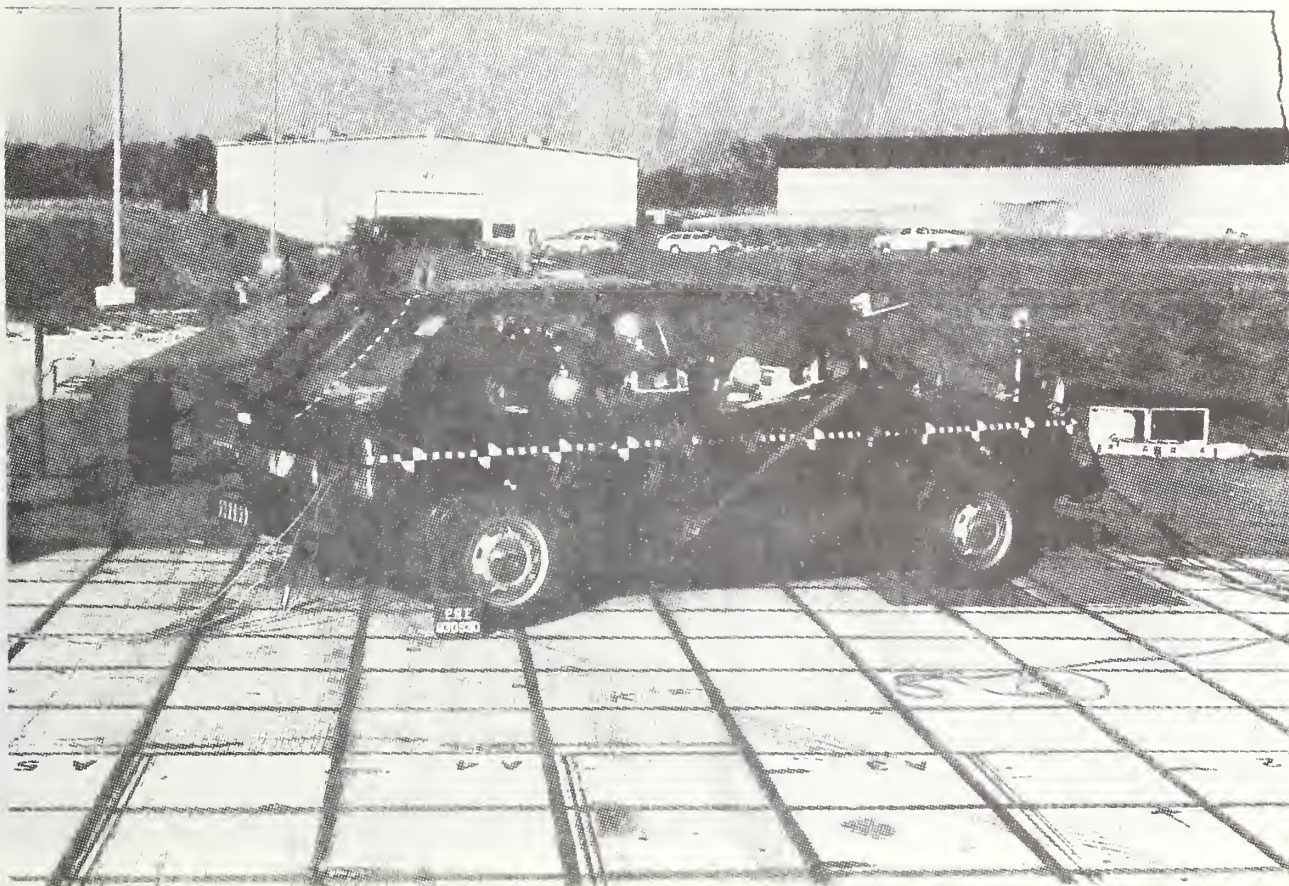


Figure A-3. PRE-TEST OVERALL - VIEW 3

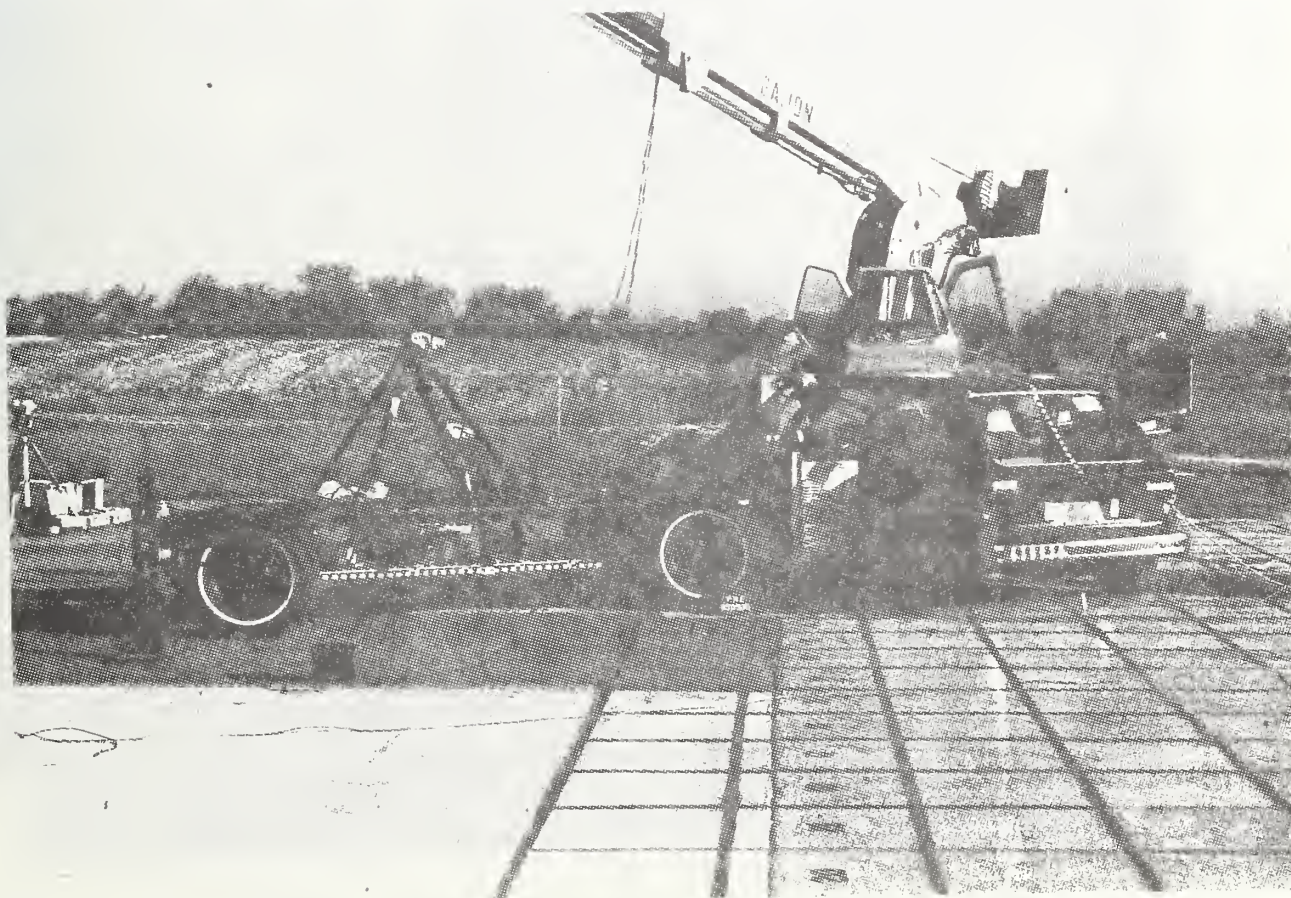


Figure A-4. PRE-TEST OVERALL - VIEW 4

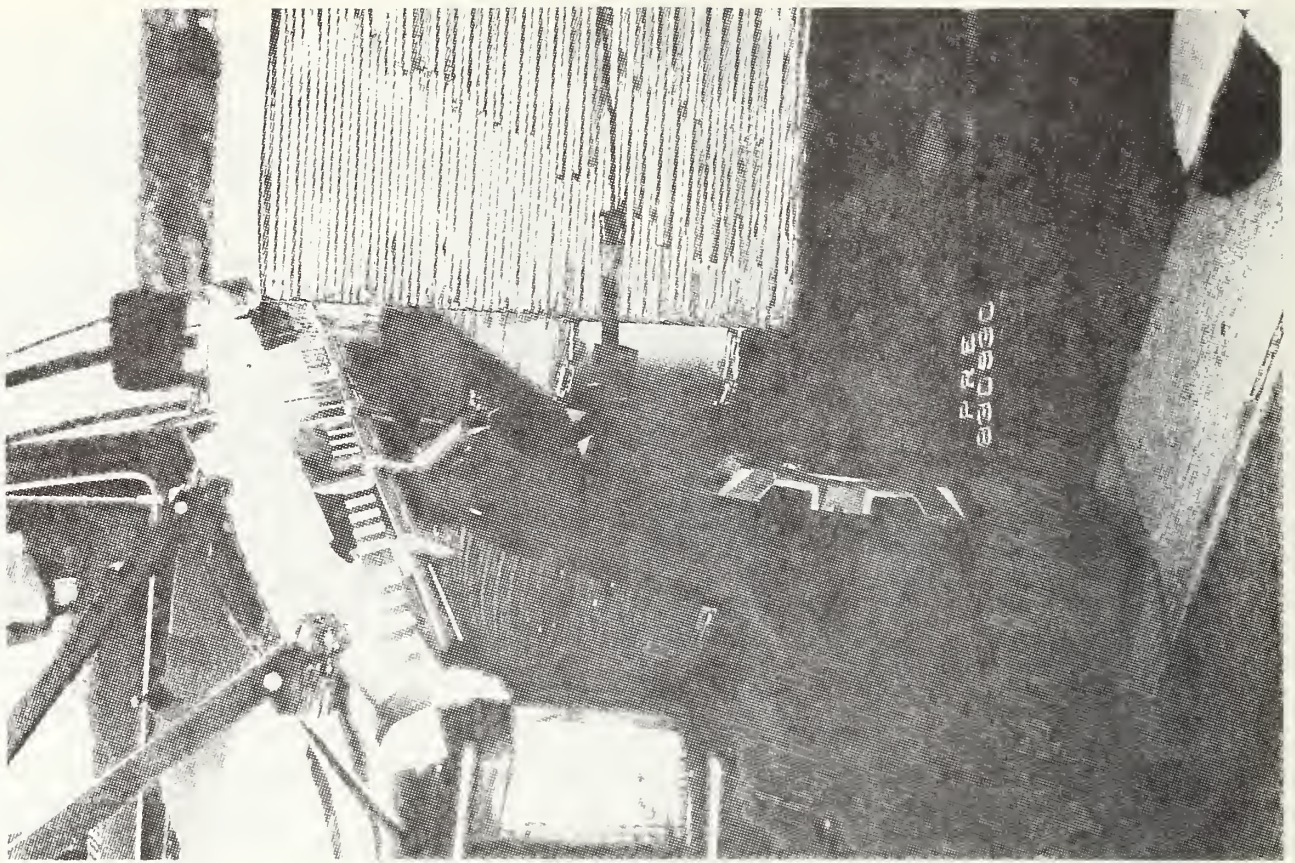


Figure A-5. PRE-TEST CLOSEUP - VIEW 1

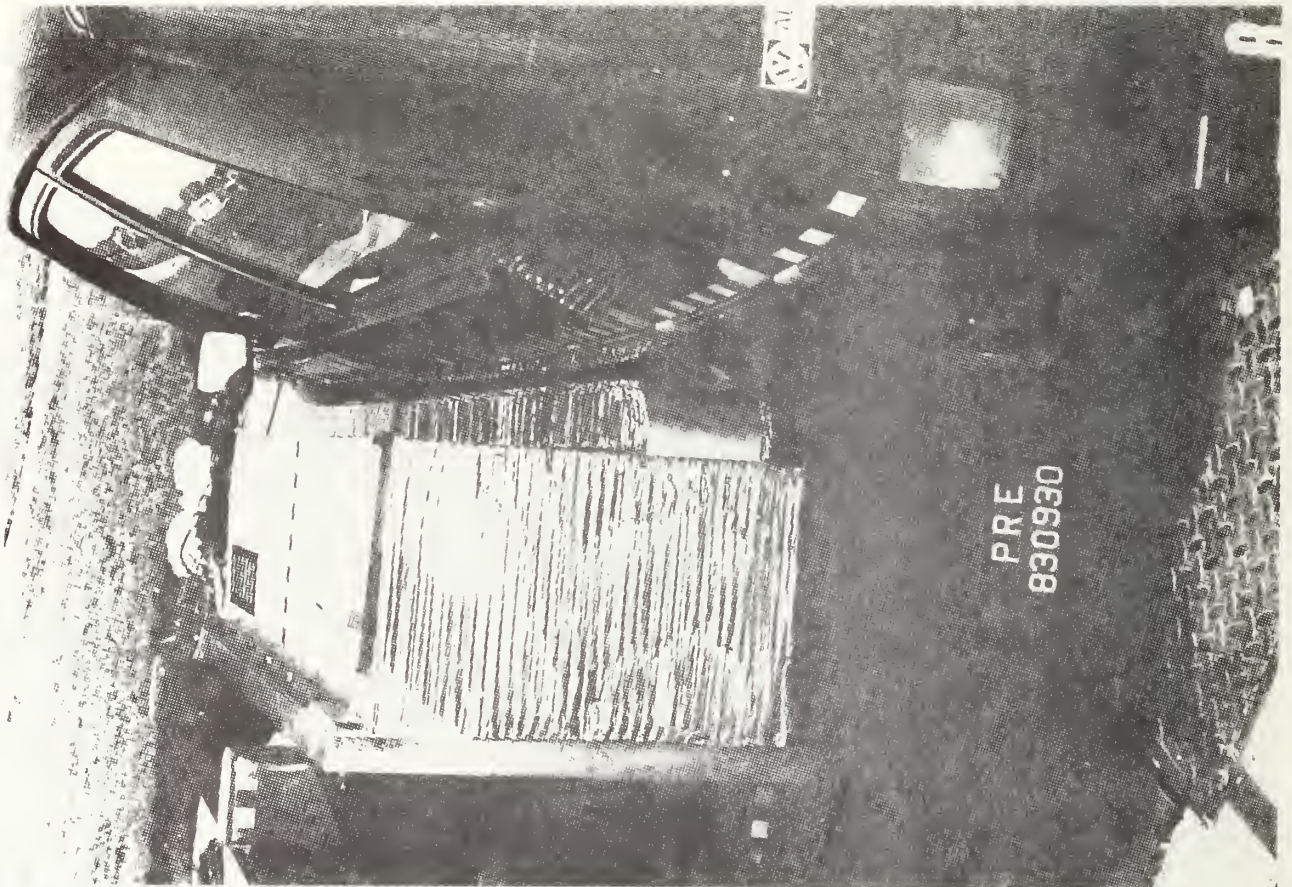


Figure A-6. PRE-TEST CLOSEUP - VIEW 2

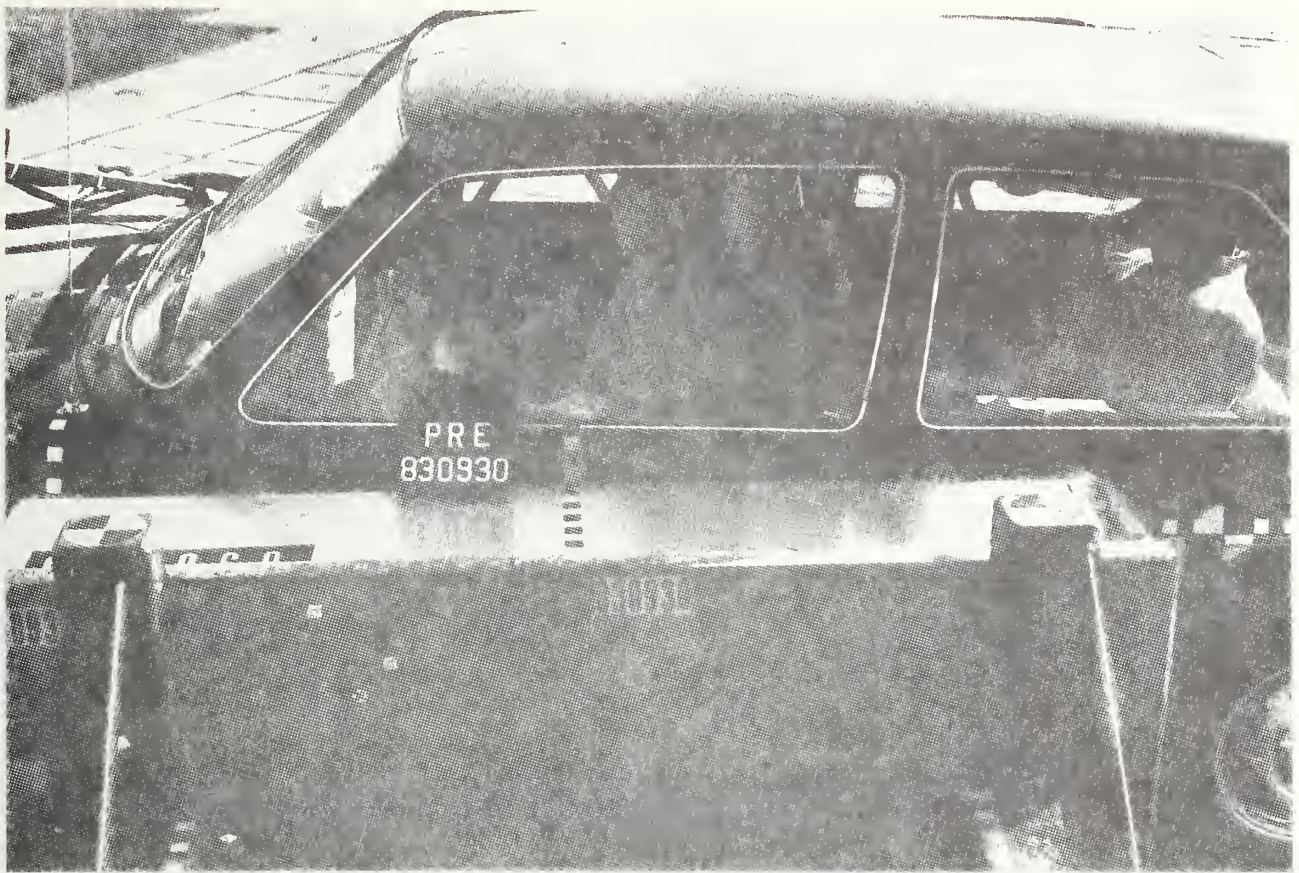


Figure A-7. PRE-TEST CLOSEUP - VIEW 3



Figure A-8. PRE-TEST DRIVER DUMMY - VIEW 1

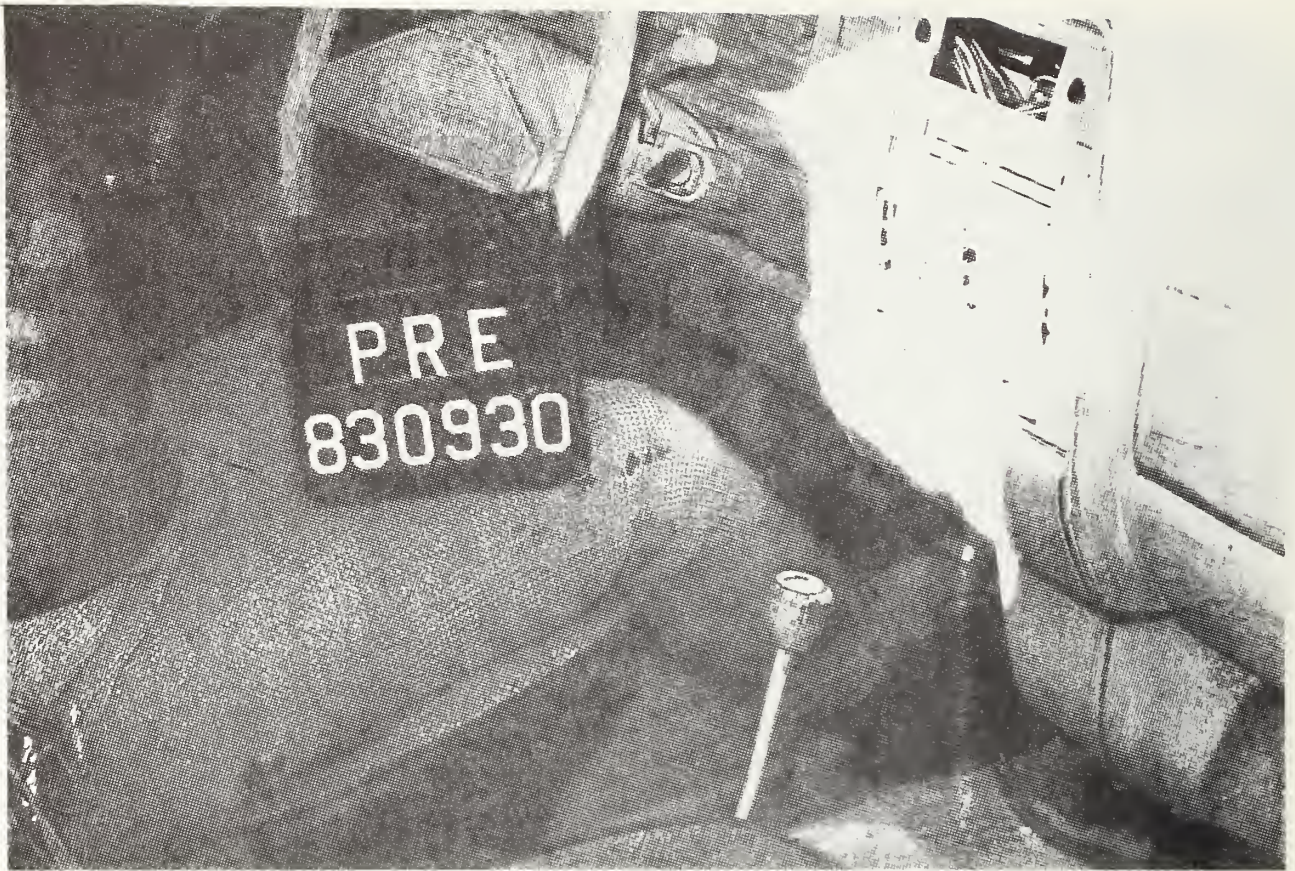


Figure A-9. PRE-TEST DRIVER DUMMY - VIEW 2



Figure A-10. PRE-TEST PASSENGER DUMMY - VIEW 1

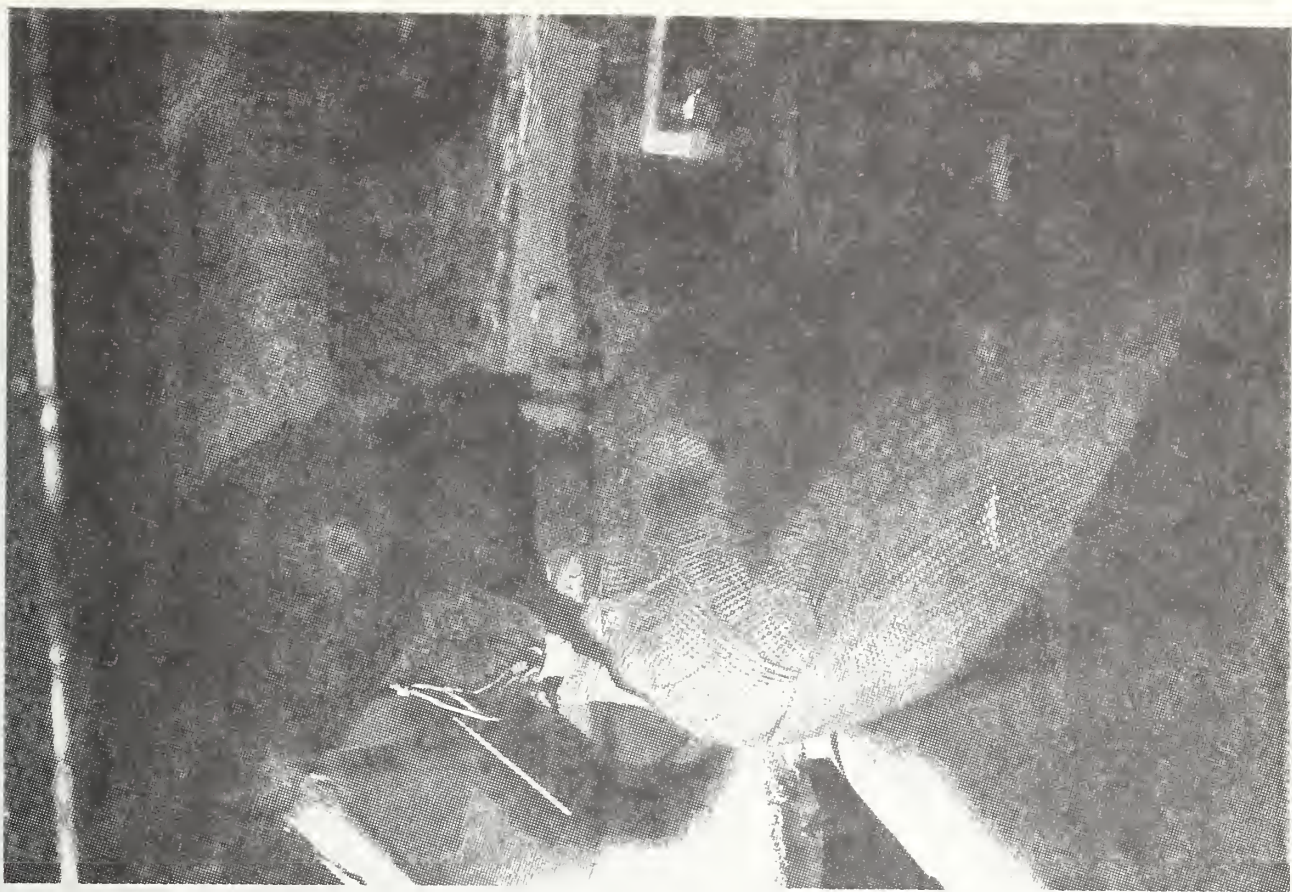


Figure A-11. PRE-TEST PASSENGER DUMMY - VIEW 2

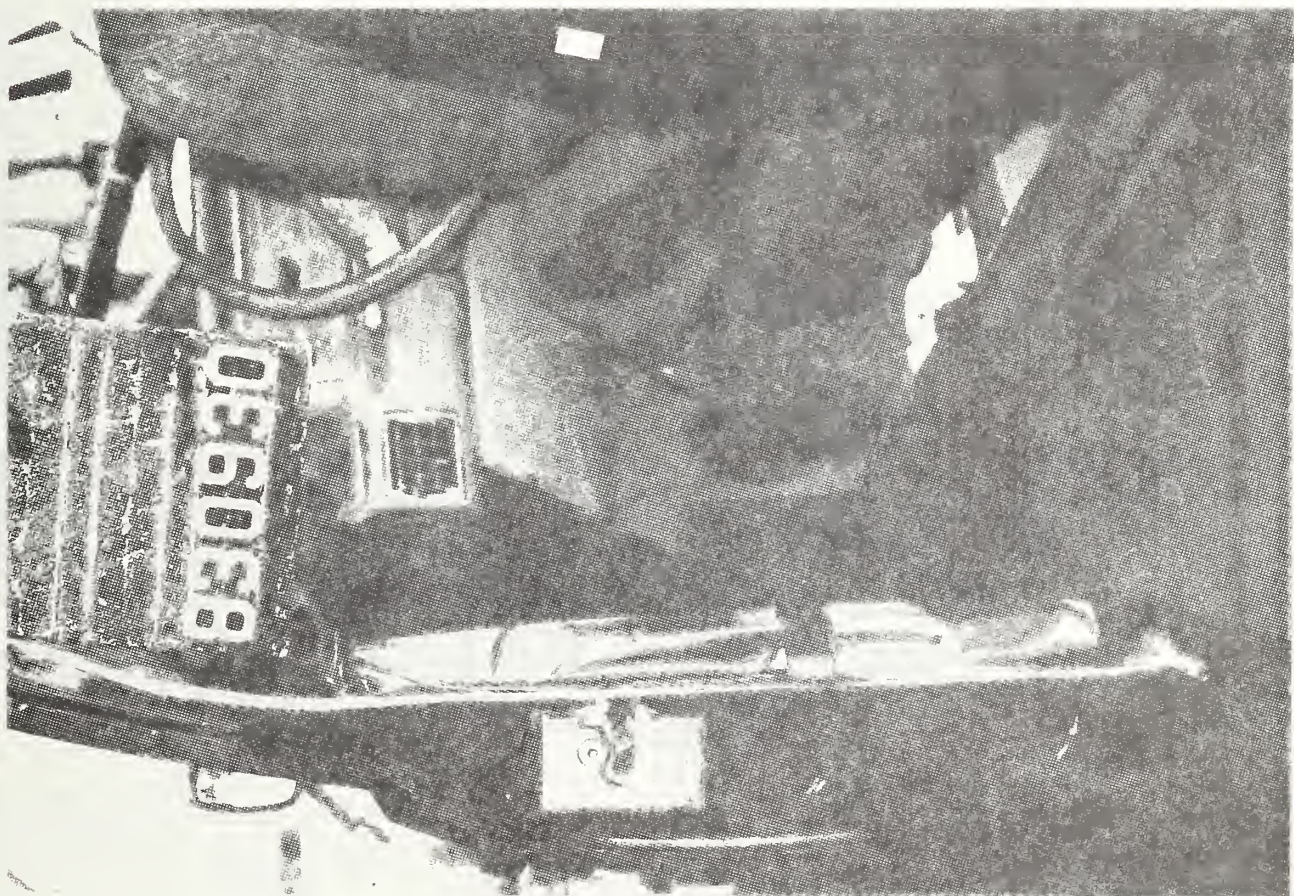


Figure A-12. PRE-TEST DRIVER'S PADDING - VIEW 1

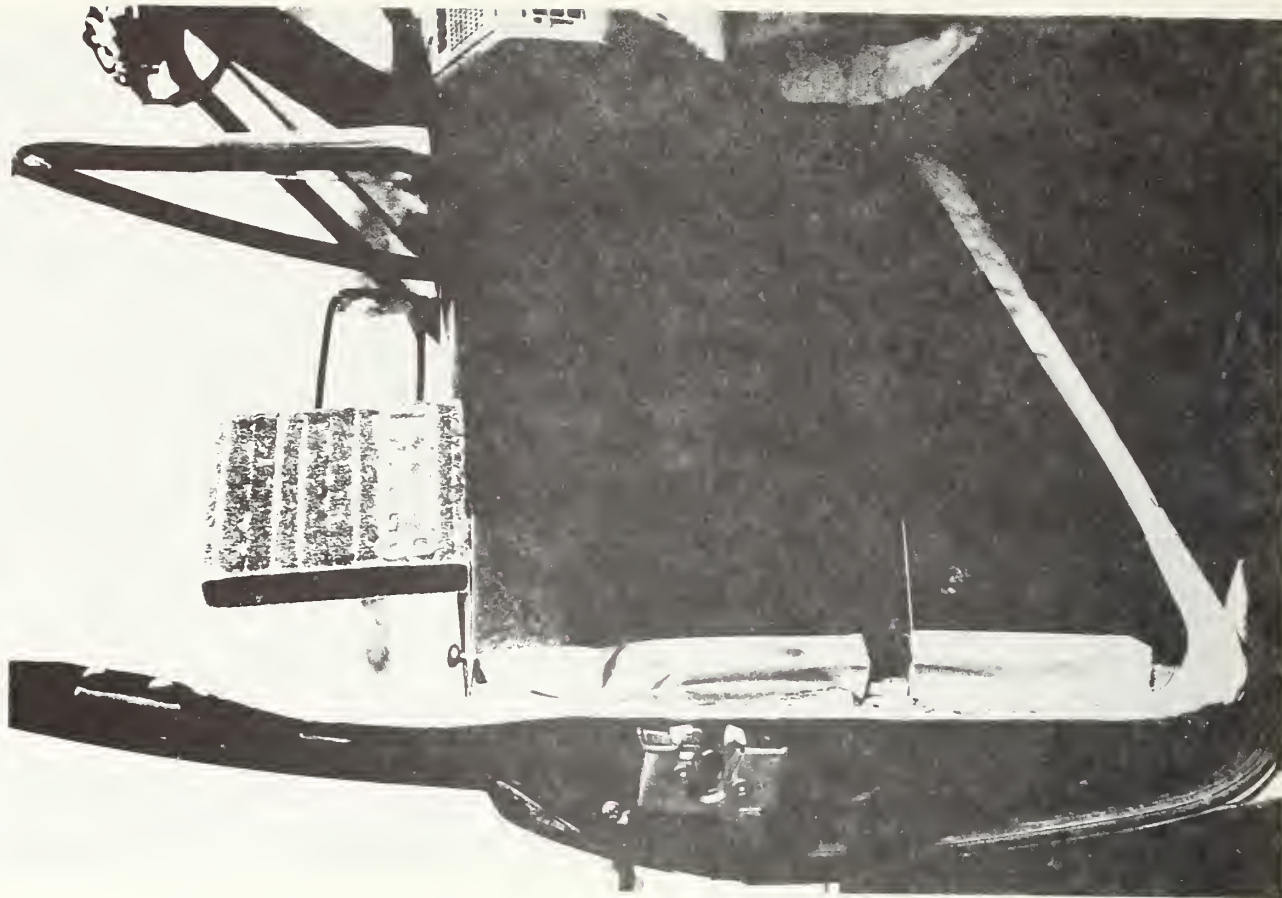


Figure A-13. PRE-TEST DRIVER'S PADDING - VIEW 2



Figure A-14. CRASH EVENT PHOTOGRAPH

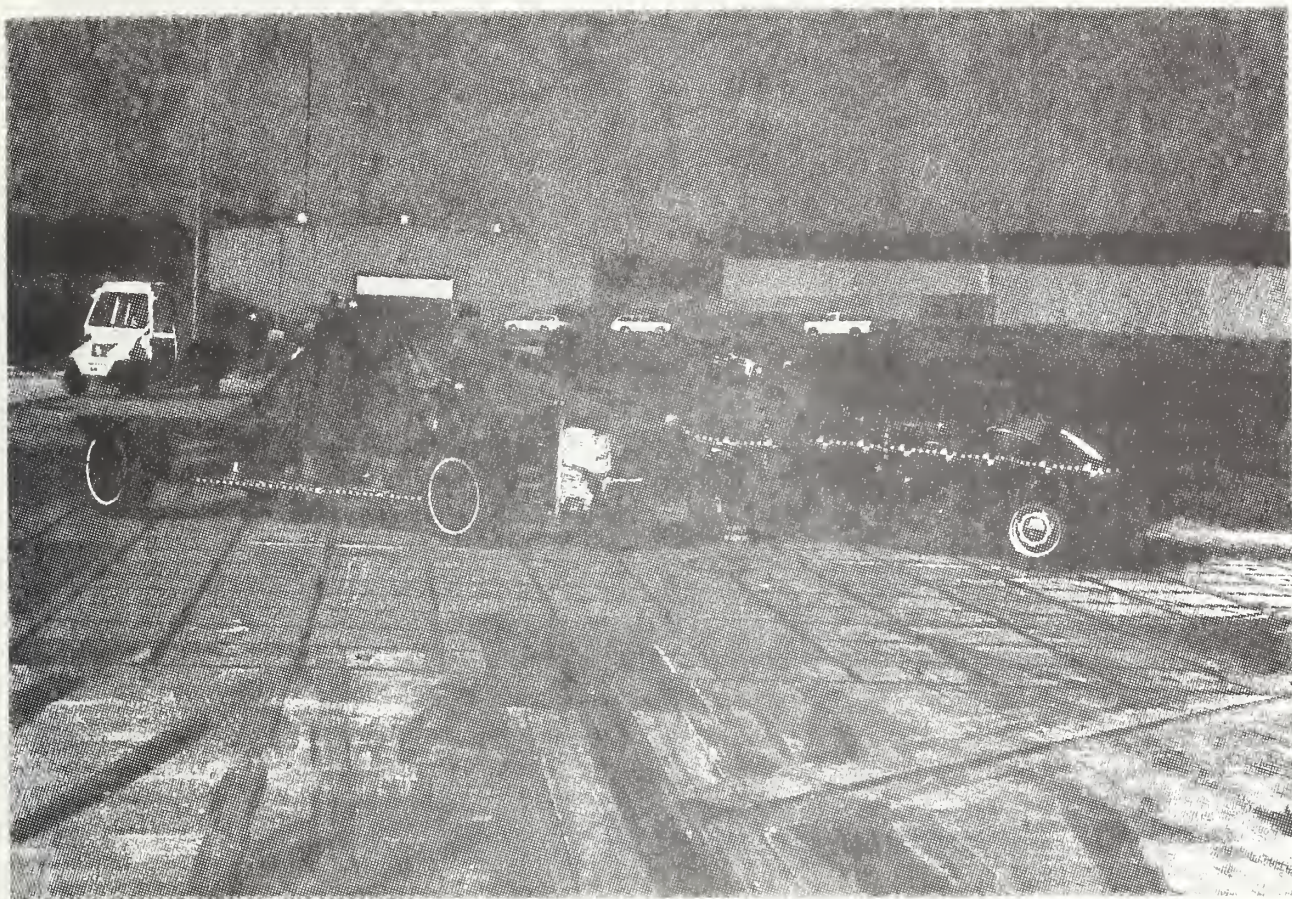


Figure A-15. POST-TEST OVERALL - VIEW 1



Figure A-16. POST-TEST OVERALL - VIEW 2



Figure A-17. POST-TEST OVERALL - VIEW 3

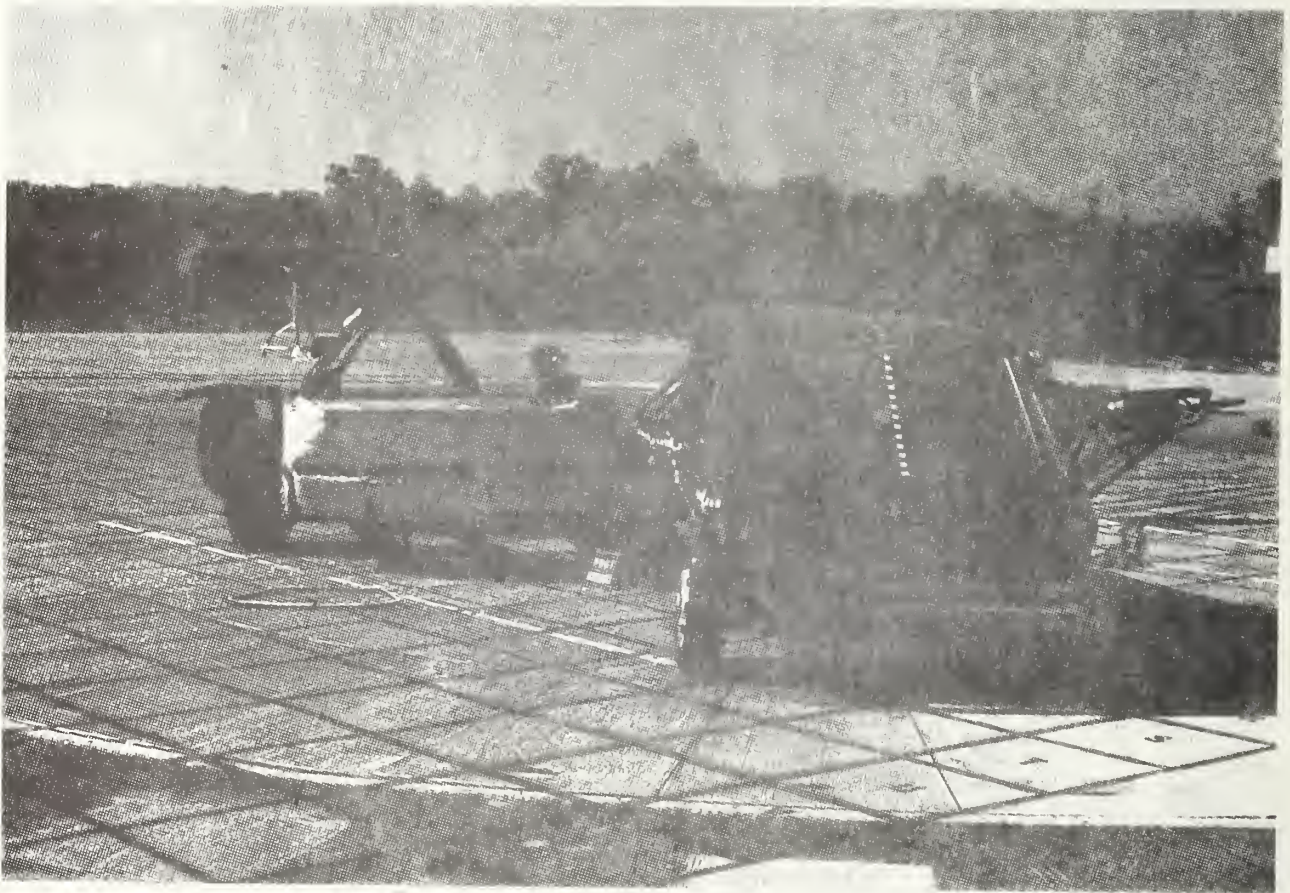


Figure A-18. POST-TEST OVERALL - VIEW 4

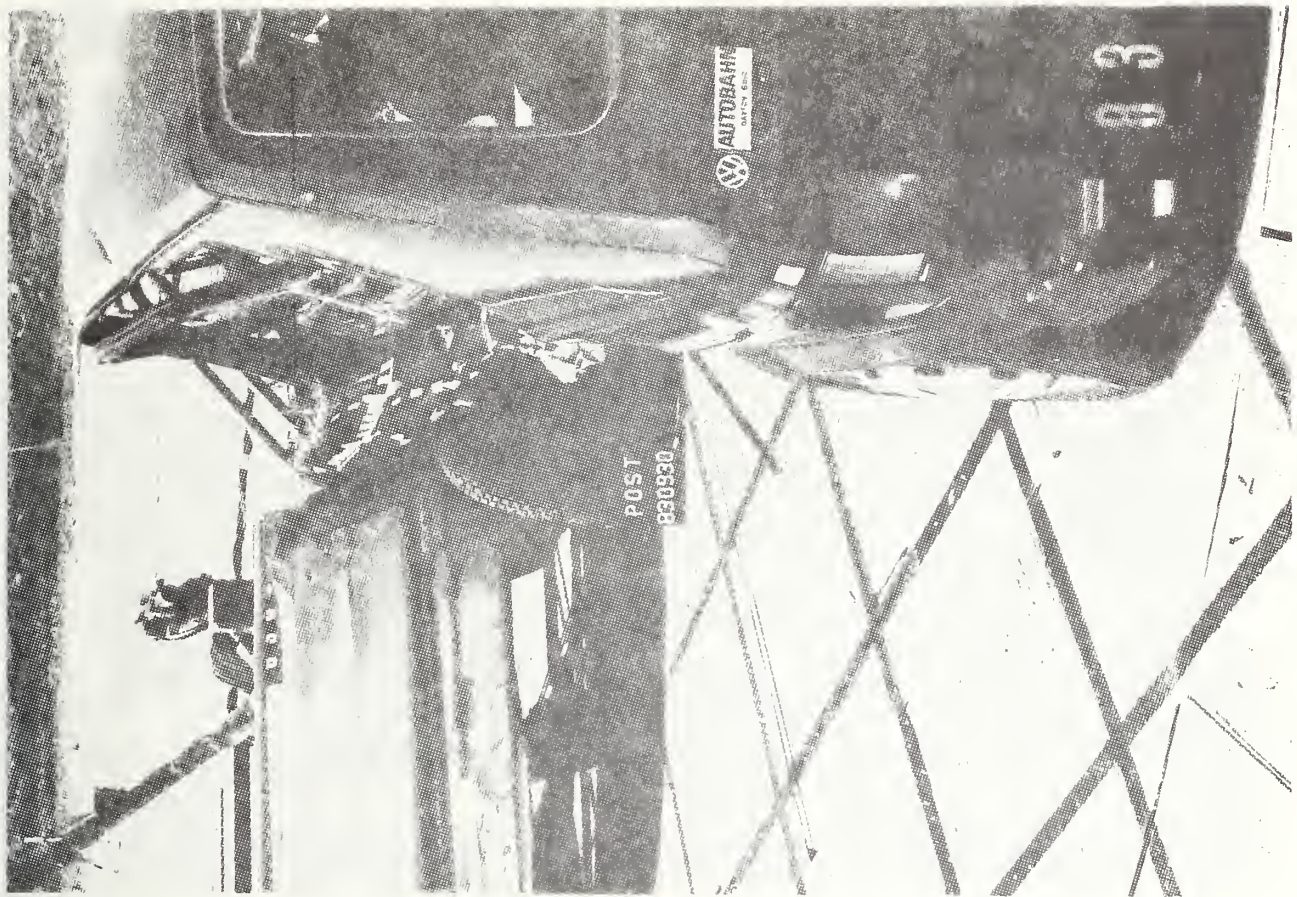


Figure A-19. POST-TEST CLOSEUP - VIEW 1

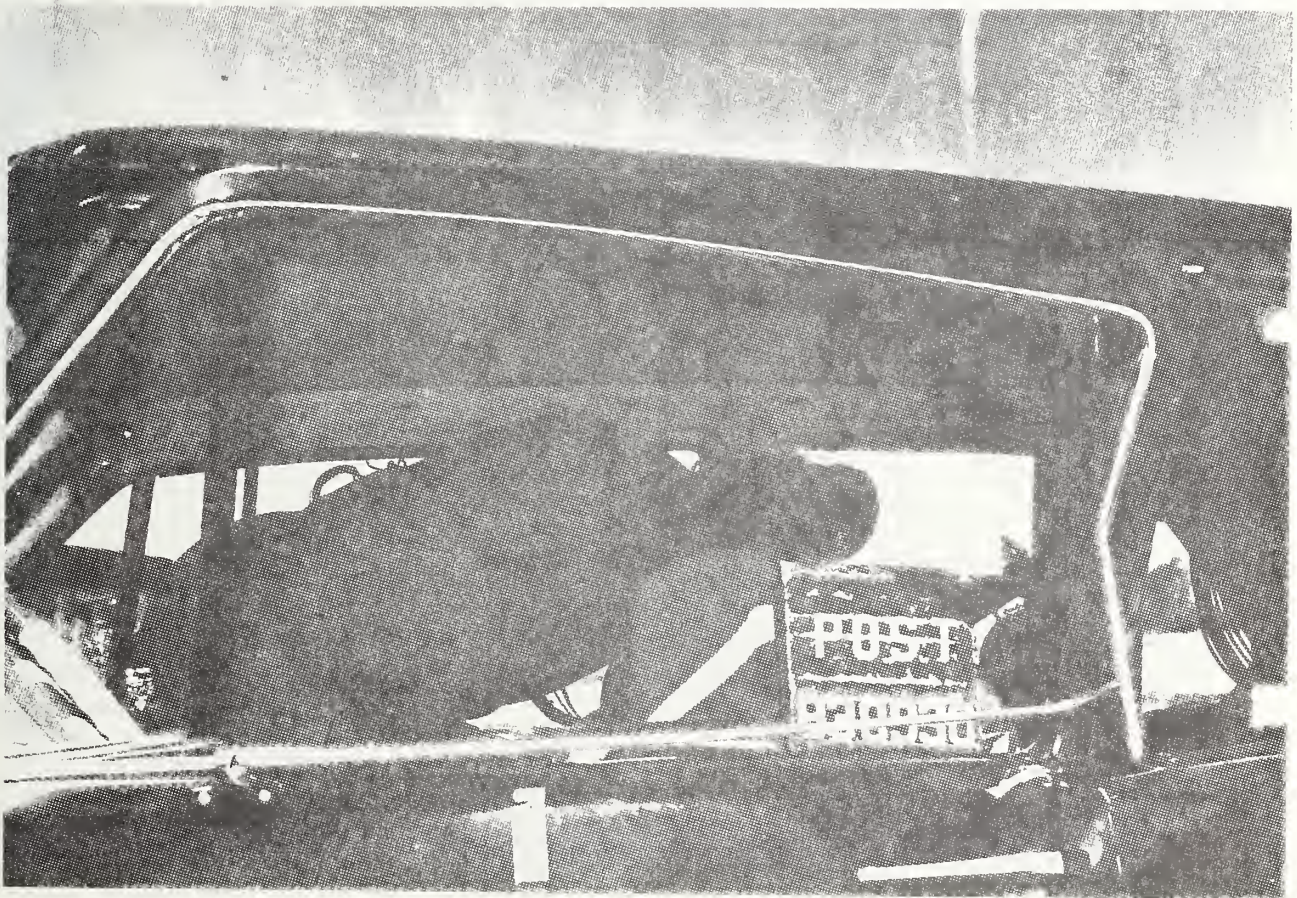


Figure A-20. POST-TEST DRIVER DUMMY - VIEW 1

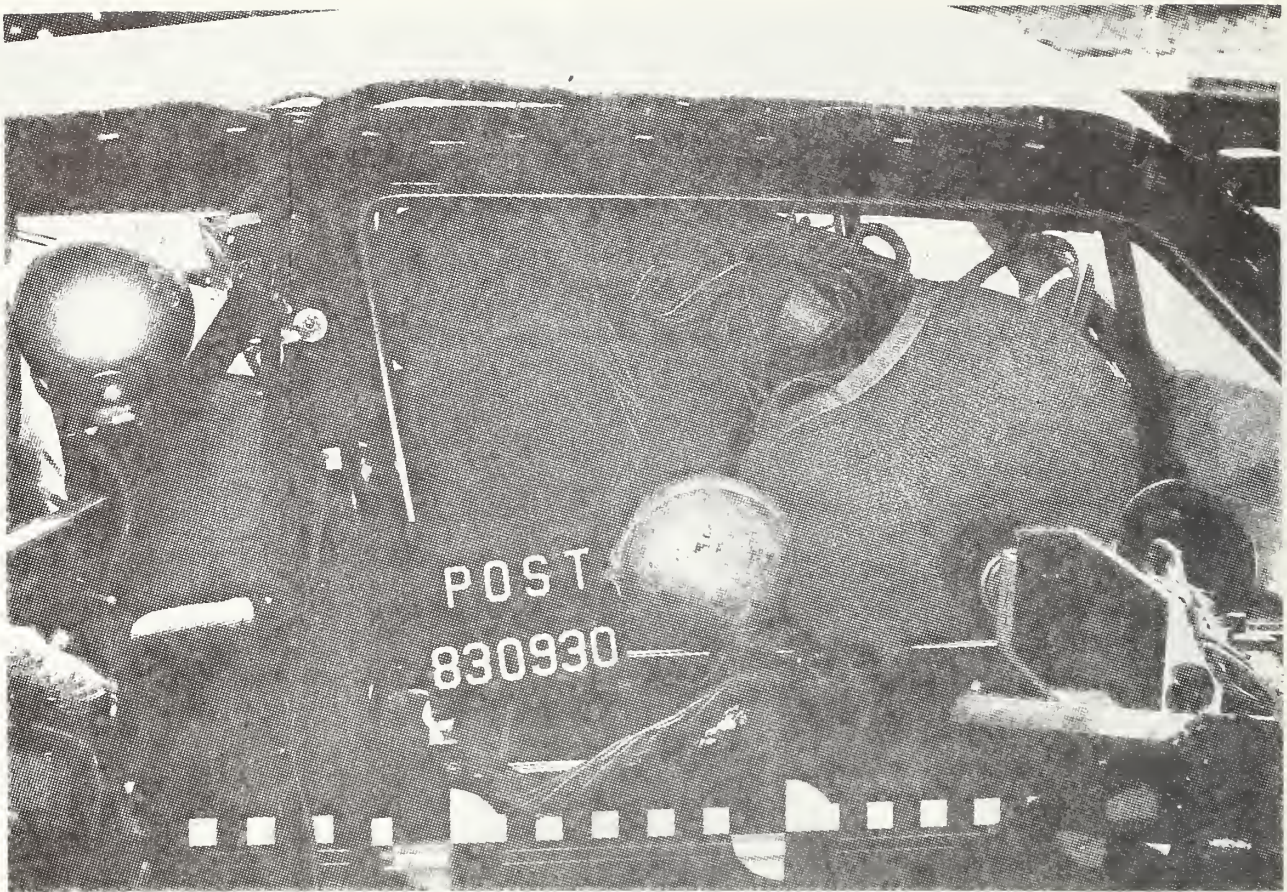


Figure A-21. POST-TEST DRIVER DUMMY - VIEW 2

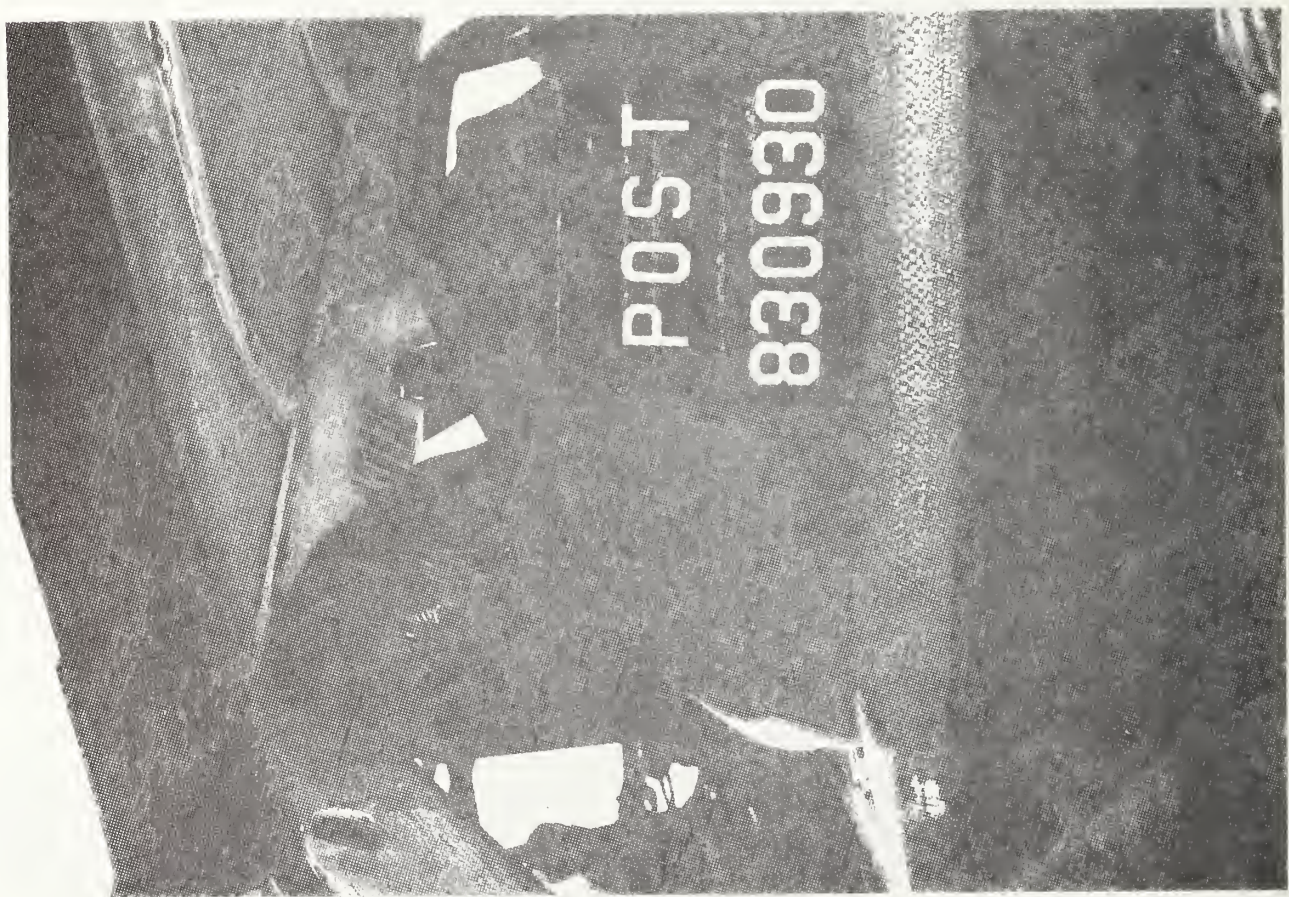


Figure A-22. POST-TEST PASSENGER DUMMY - VIEW 1

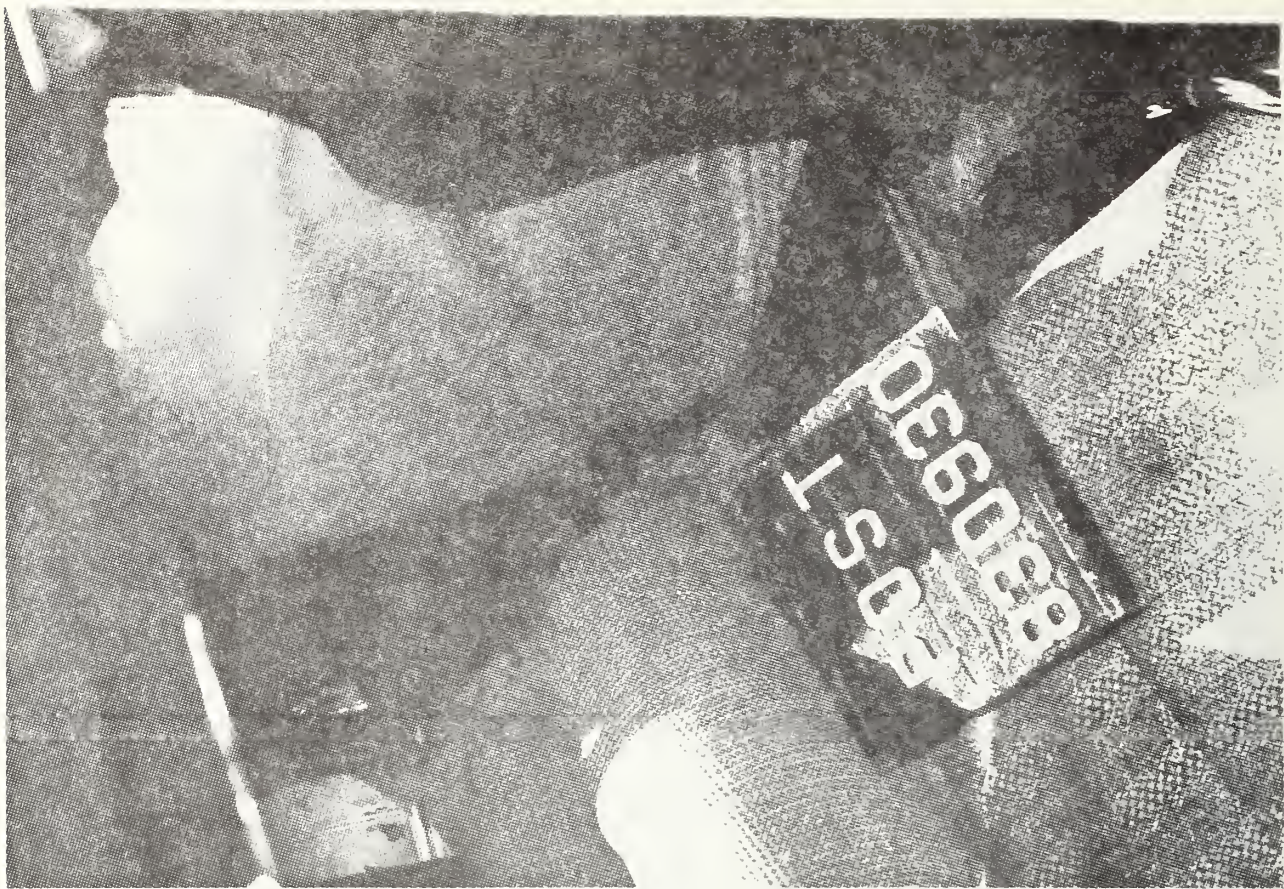


Figure A-25. POST-TEST PASSENGER DUMMY - VIEW 4

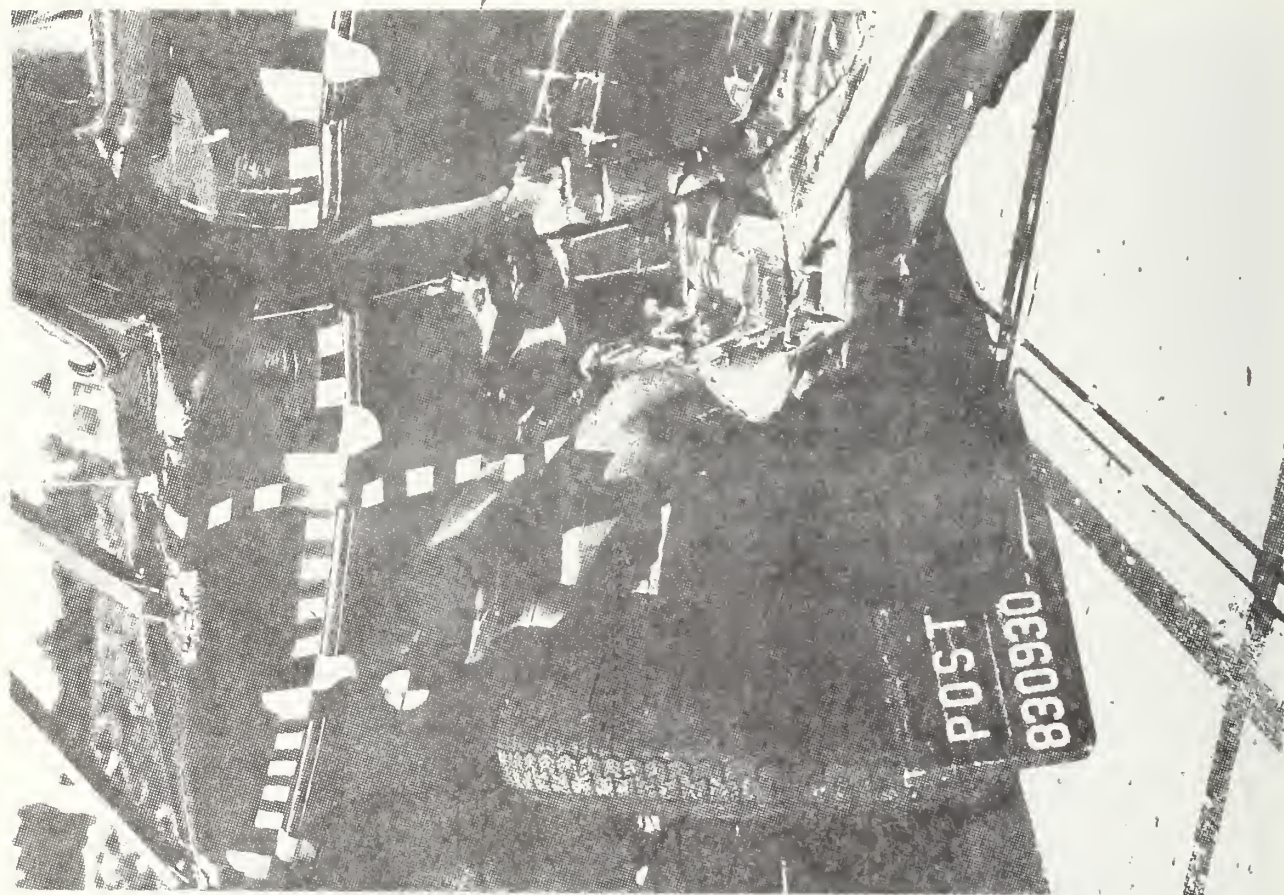


Figure A-26. POST-TEST VEHICLE DAMAGE - VIEW 1

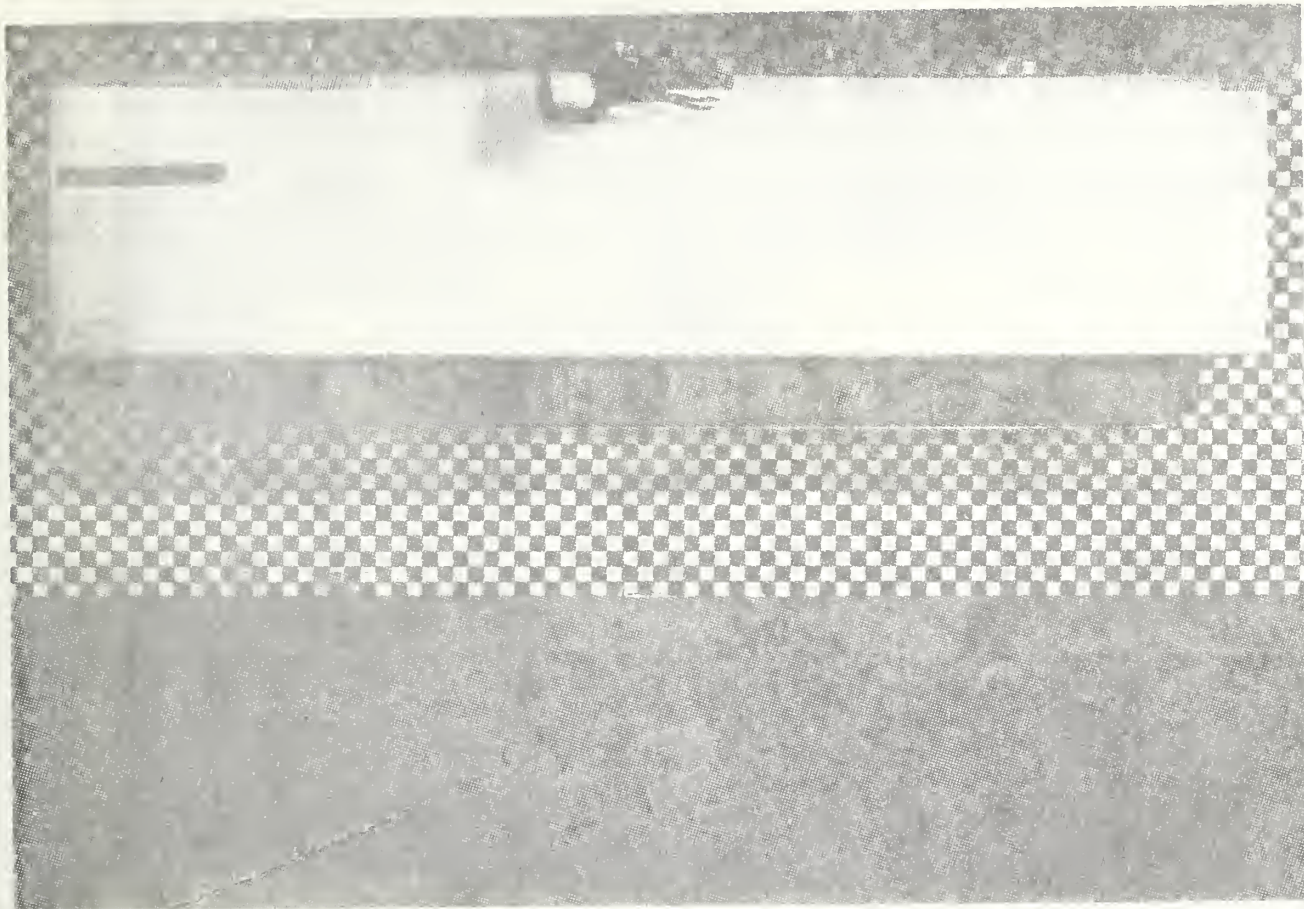


Figure A-27. PRE-TEST MDB FACE - VIEW 1

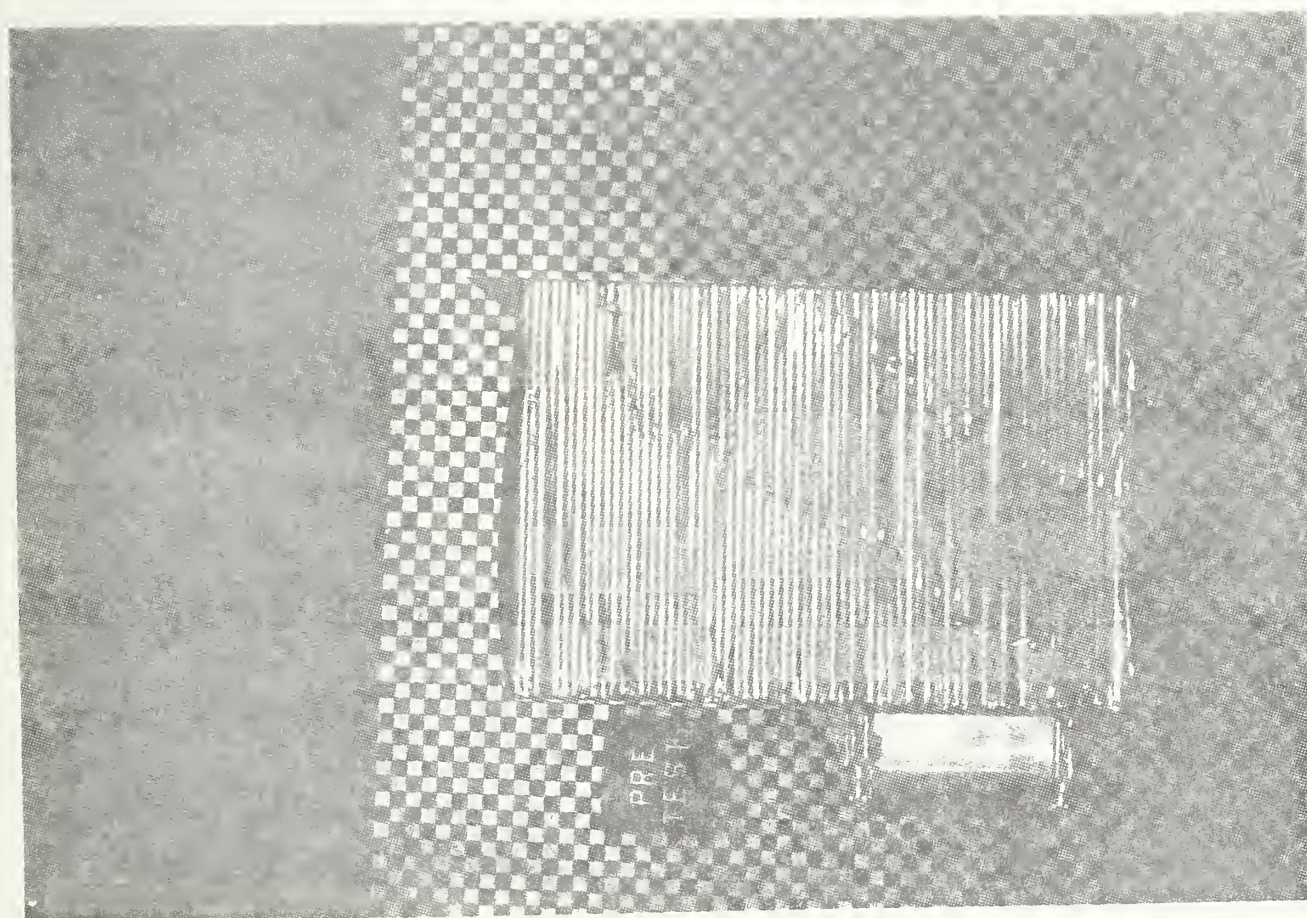


Figure A-28. PRE-TEST MDB FACE - VIEW 2

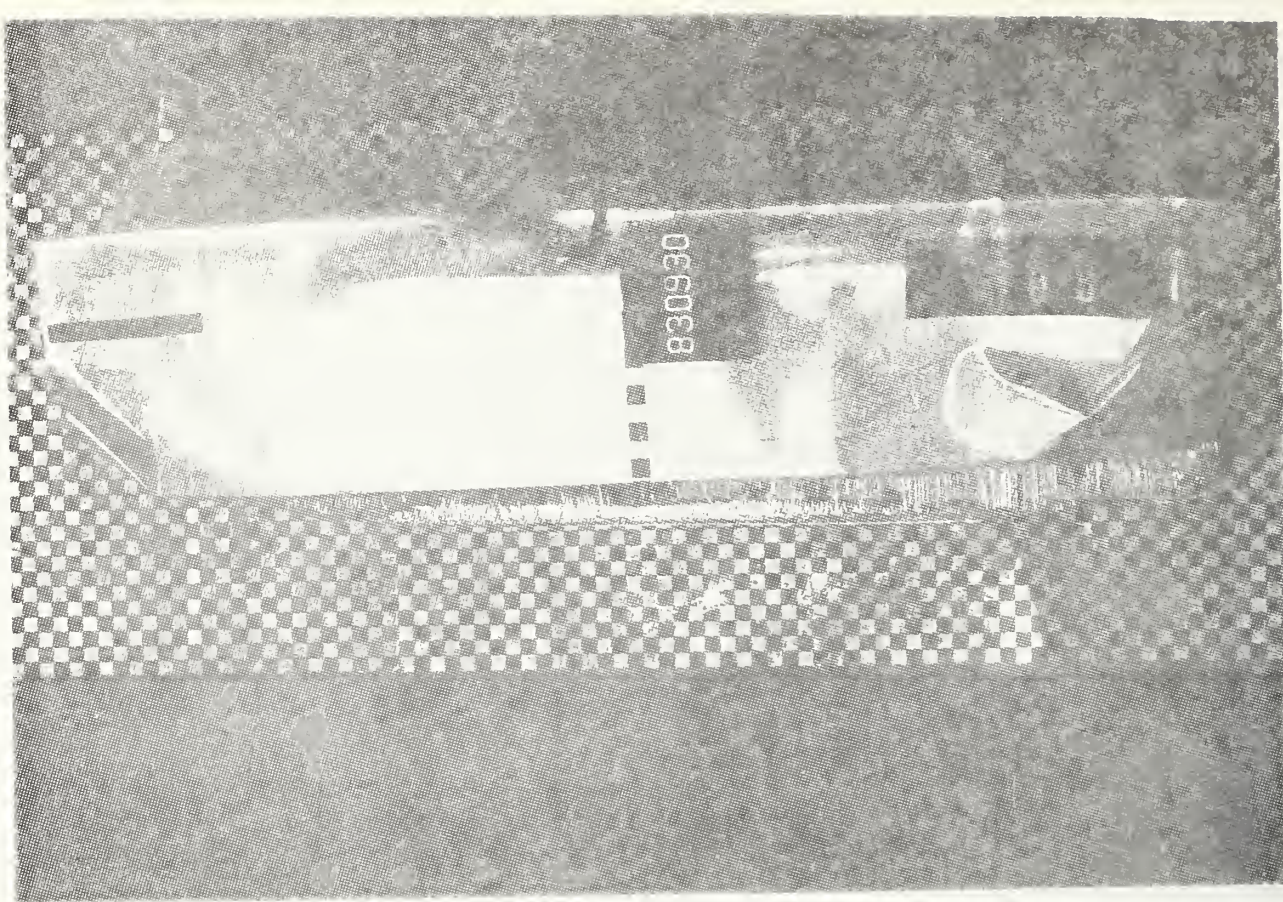


Figure A-29. POST-TEST MDB FACE - VIEW 1

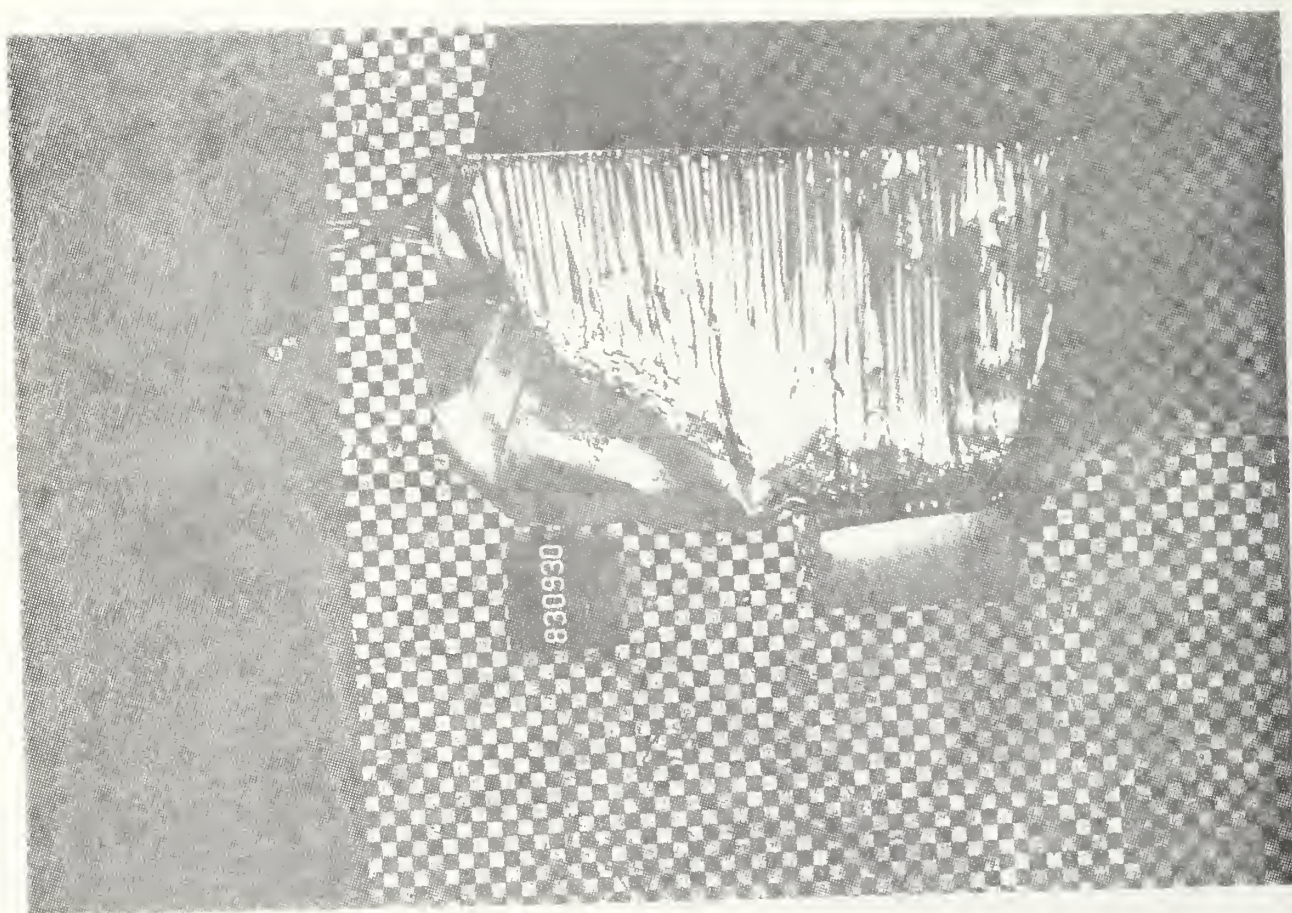


Figure A-30. POST-TEST MDB FACE - VIEW 2

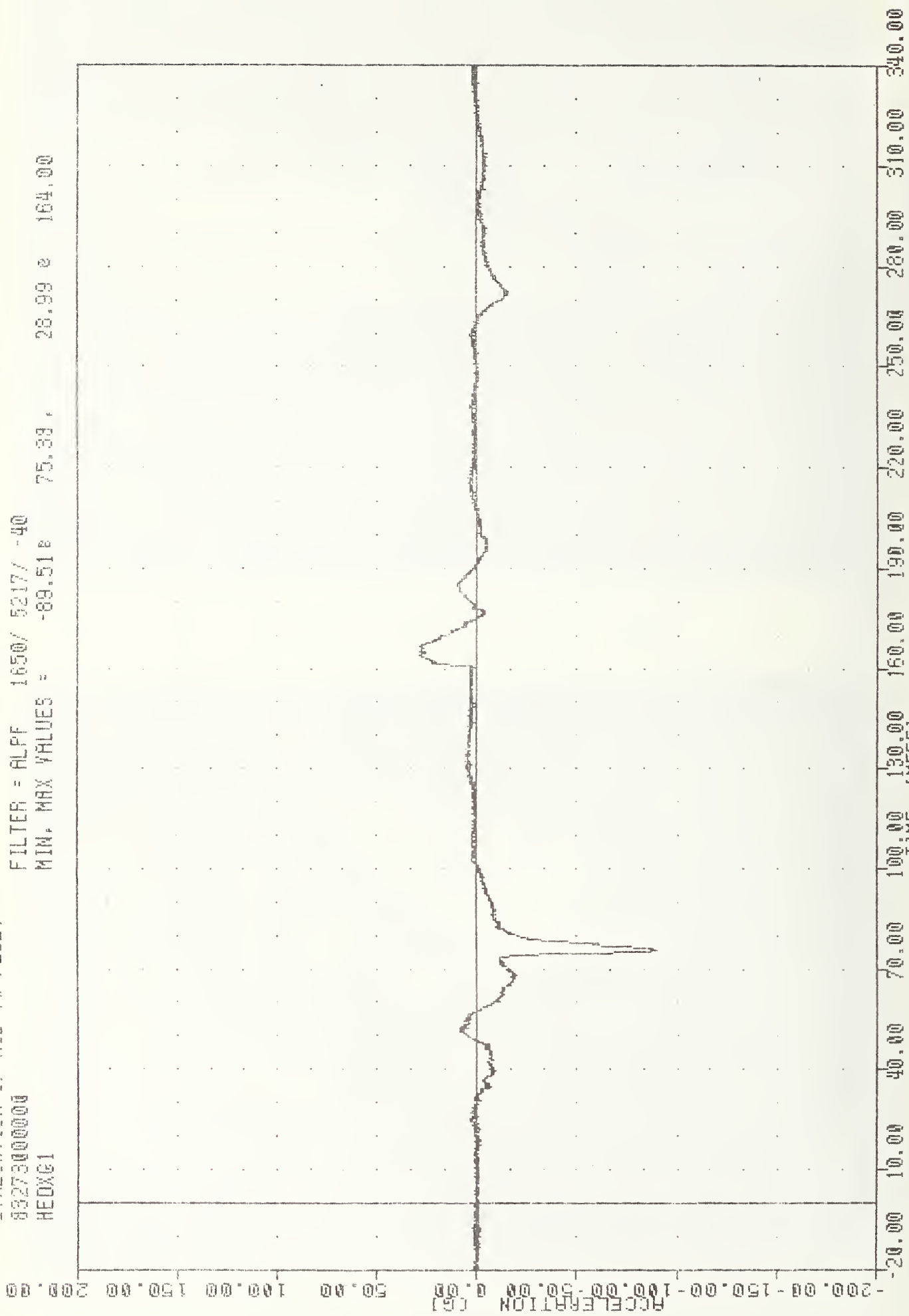
APPENDIX B
DATA PLOT PRESENTATION

Data plots generated from the crash test data are presented on the following pages. All data are recorded on magnetic tape for inclusion in the NHTSA crash test data base system. All data were filtered according to SAE J211, except that dummy thorax data were filtered using the HSRI filter.

INC
 EVALUATION OF MOD VW FLEET
 832730000000
 HEDXG1

PLOT UNIT
 10.40

FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = -89.51 75.38 28.99 164.00

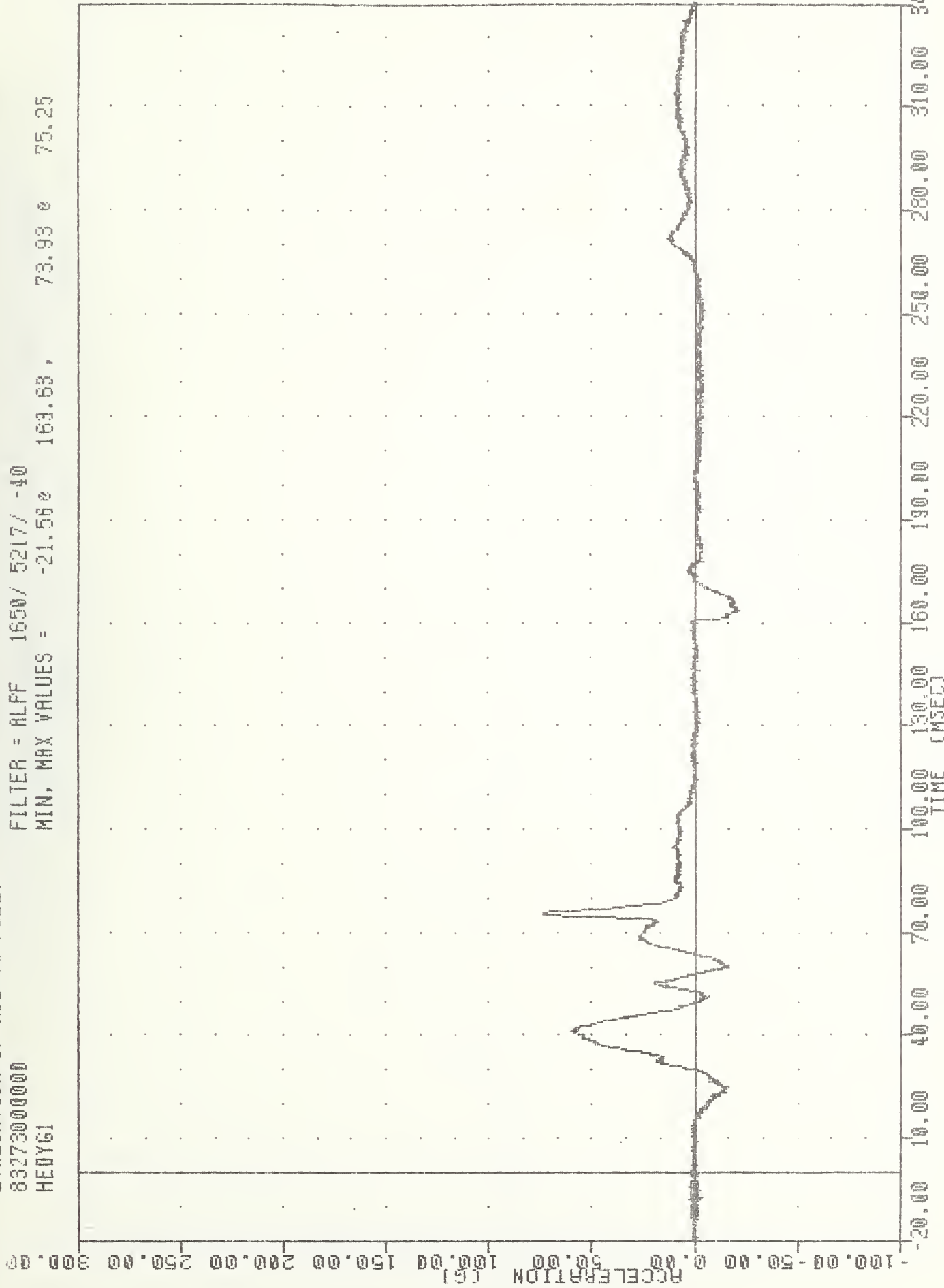


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER HEAD ACCELERATION X AXIS

TRL 830930
 EVALUATION OF MDD VW FLEET
 83273000000
 HEDY61

PLOT DATE 4-JUL-83 10:45:36

FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = -21.562 163.63, 73.93 75.25

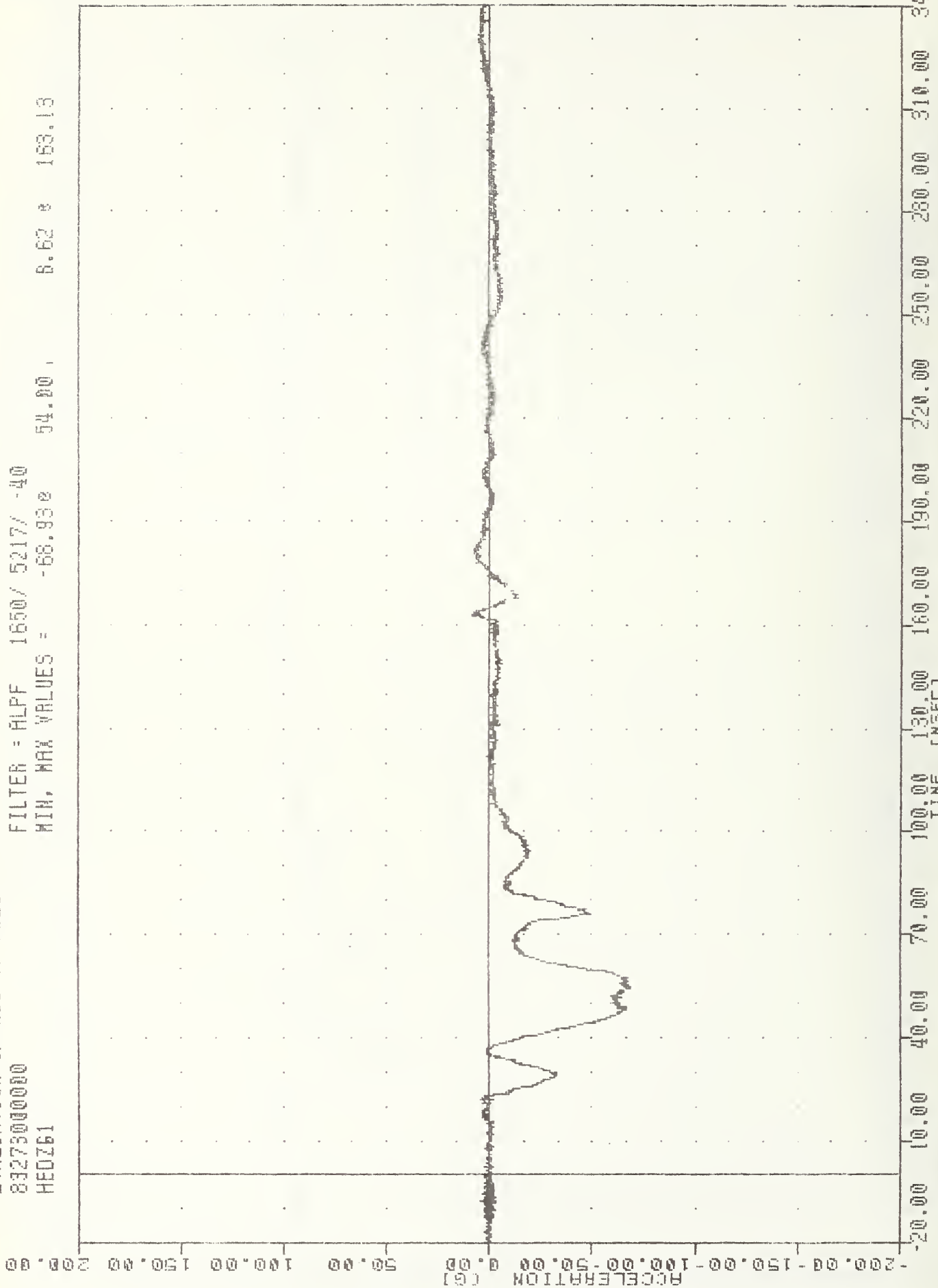


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER HEAD ACCELERATION Y AXIS

TAC
EVALUATION OF MOD VN FLEET
83273000000
HEDZ61

PLOT DATE 4-JUL-83 10:45:36

FILTER = ALPF 1650/ 5217/ -40
MIN, MAX VALUES = -68.930 54.80, 8.62 163.13

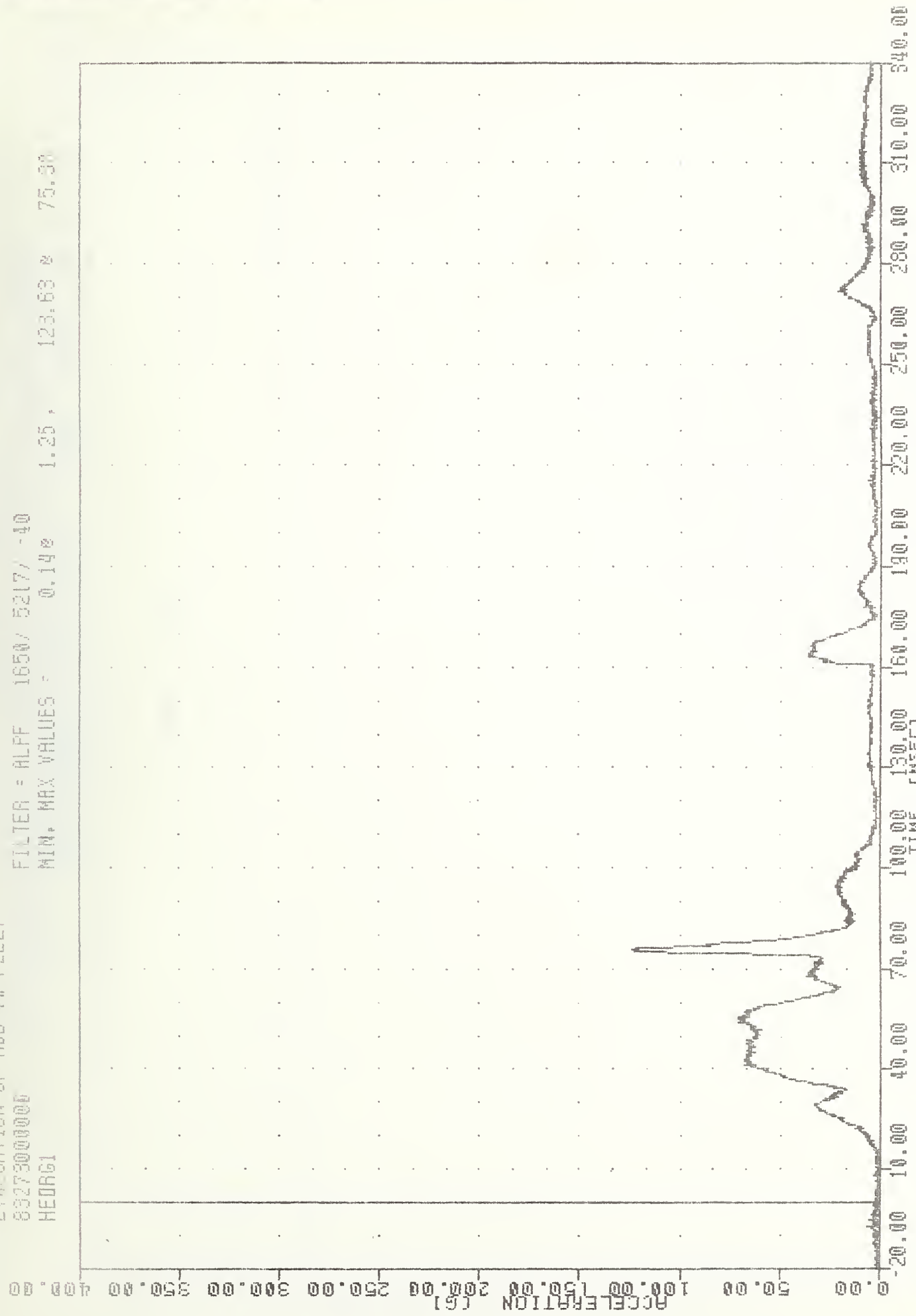


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION Z AXIS

TRC 830930
EVALUATION OF MOD W/F FLEET
832730000000
HEADG1

PLOT DATE 4-ULF-83 10:45:36

FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = 0.14g 1.25, 123.63 g 75.3g



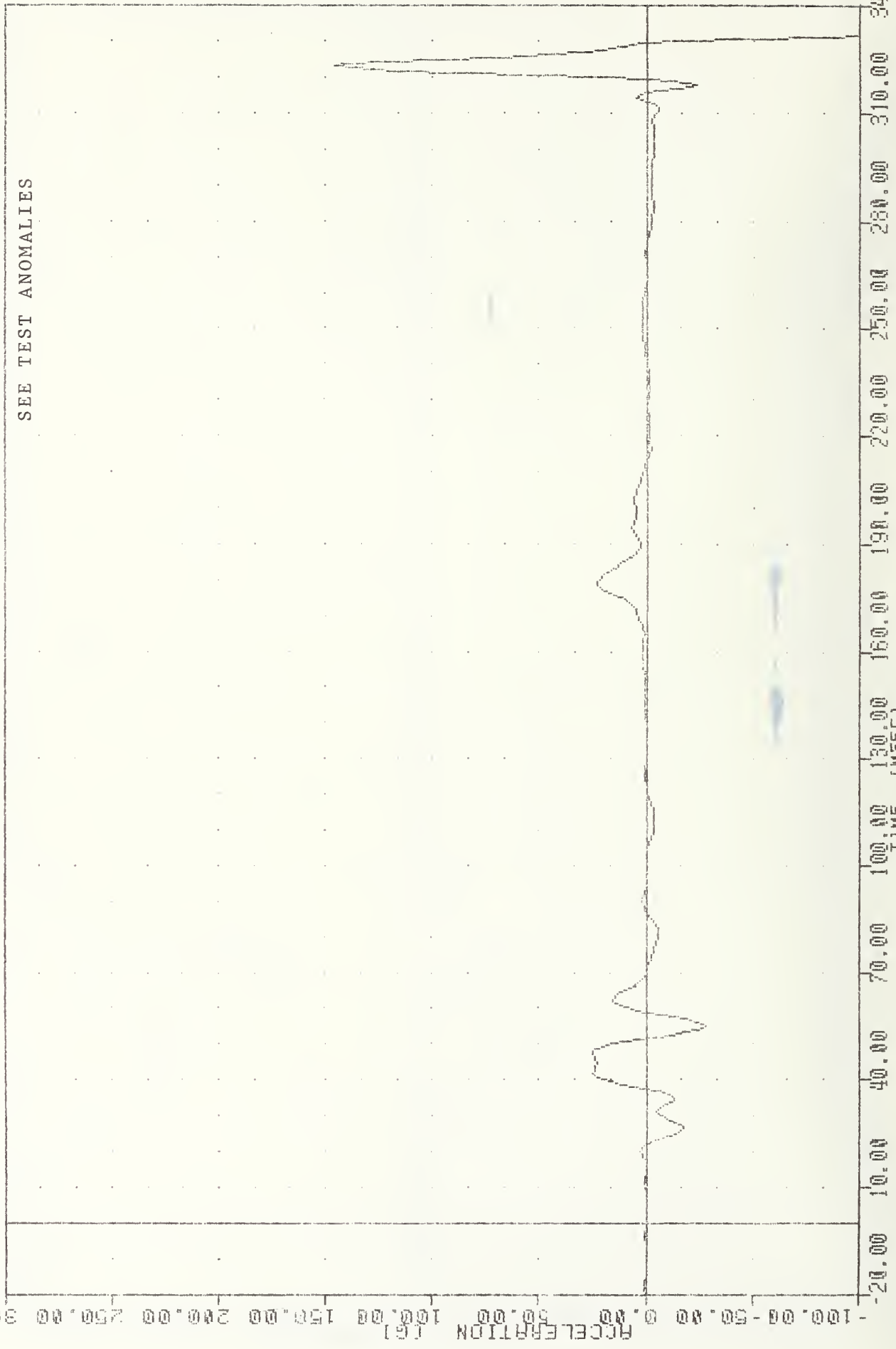
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD RESULTANT

TRC 830830 4-ULF-88 10:47:45

EVALUATION OF MOD VW FLEET
88273000000
T01XG1

FILTER = HSRI 136/ 139/ -50
MIN, MAX VALUES = -276.46 340.00, 145.71 322.50

SEE TEST ANOMALIES



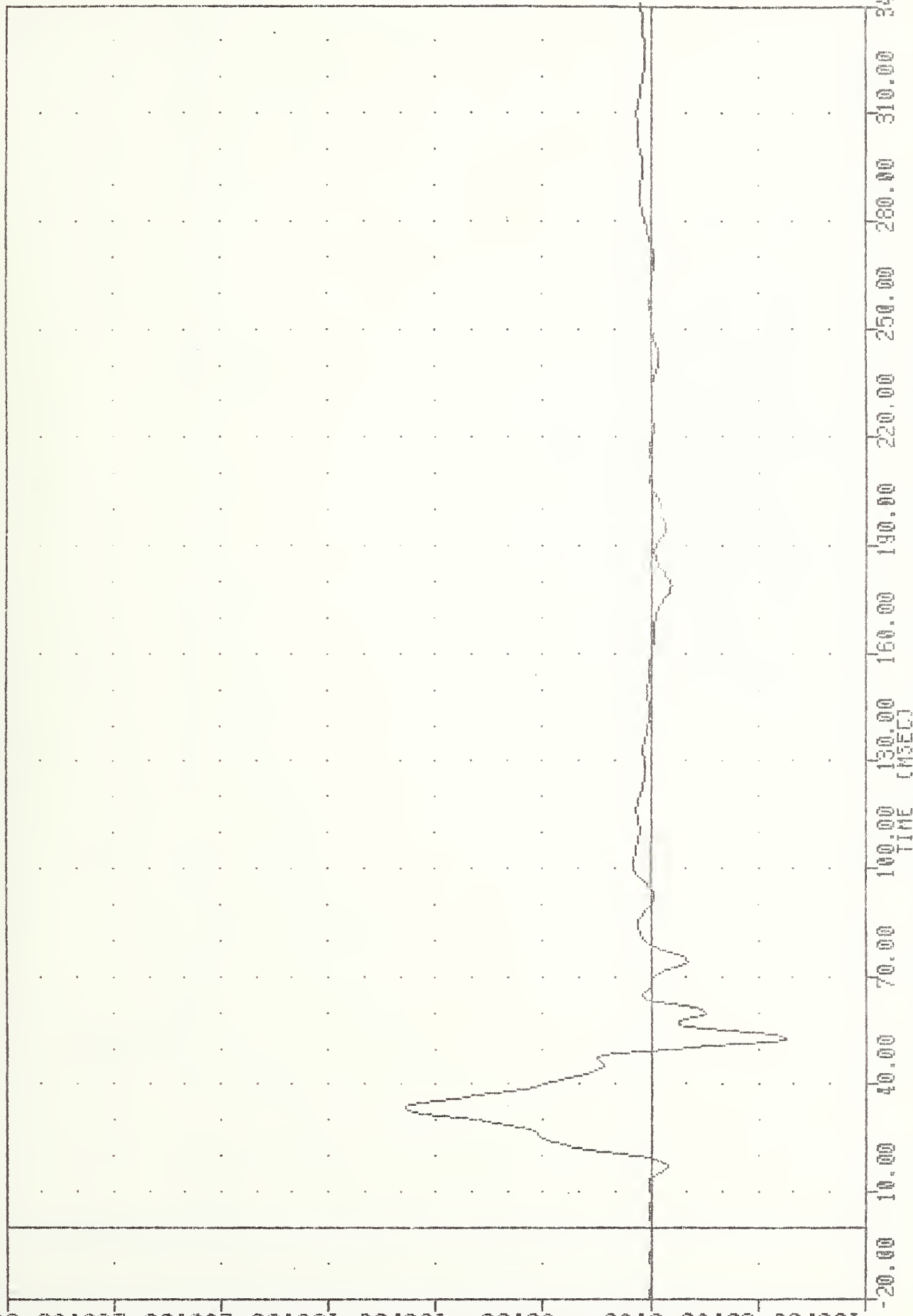
TRC 830930
EVALUATION OF M00 YW FLEET
832730000000
T01Y61

PLOT DATE 4-OCT-83 10:47:45

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -63.10e 52.50e 114.32e 33.13

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE ACCELERATION Y AXIS

TAC 830930 PLOT DATE 4-OCT-83 10:47:45

EVALUATION OF MOD VW FLEET

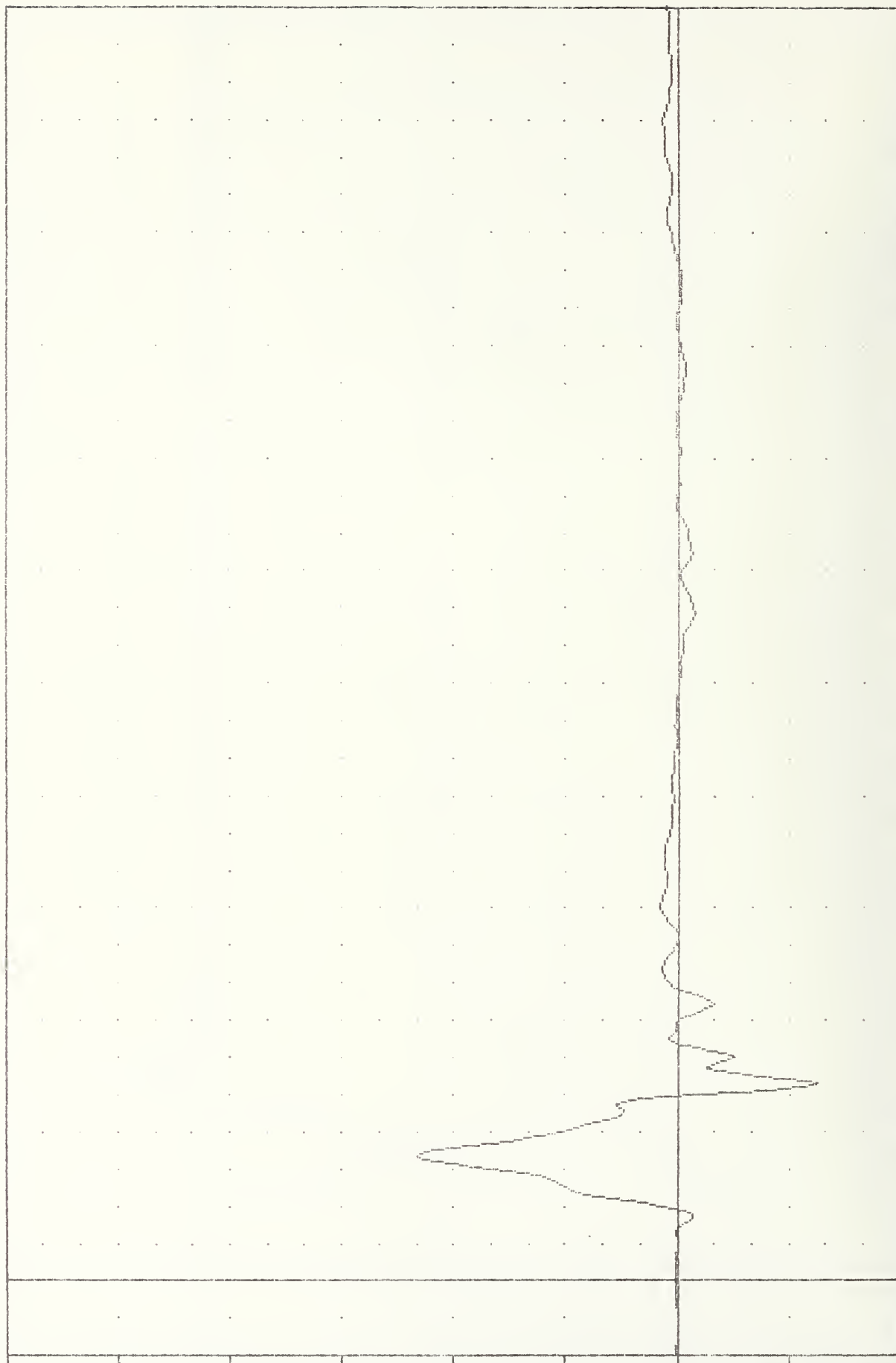
83273000000

T01Y6A

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -62.630 52.50 116.11 32.50

ACCELERATION [G]



TIME [MSEC]

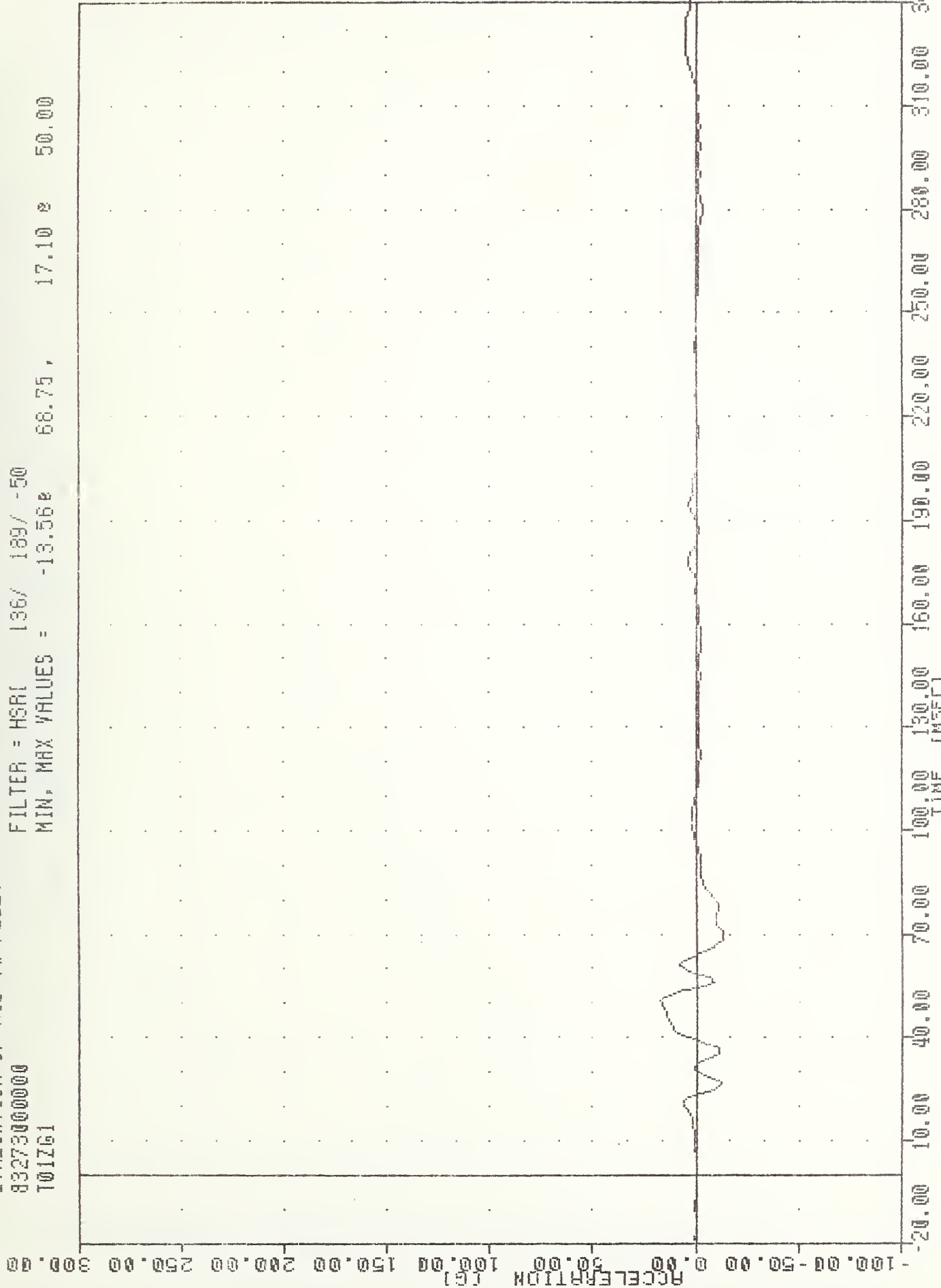
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE ACCELERATION -2 Y AXIS

TRC 830930
 EVALUATION OF MOD YW FLEET
 83273000000
 T01761

PLOT DATE 4-ULY-83 10:47:45

FILTER = HSRI 136/ 189/ -50

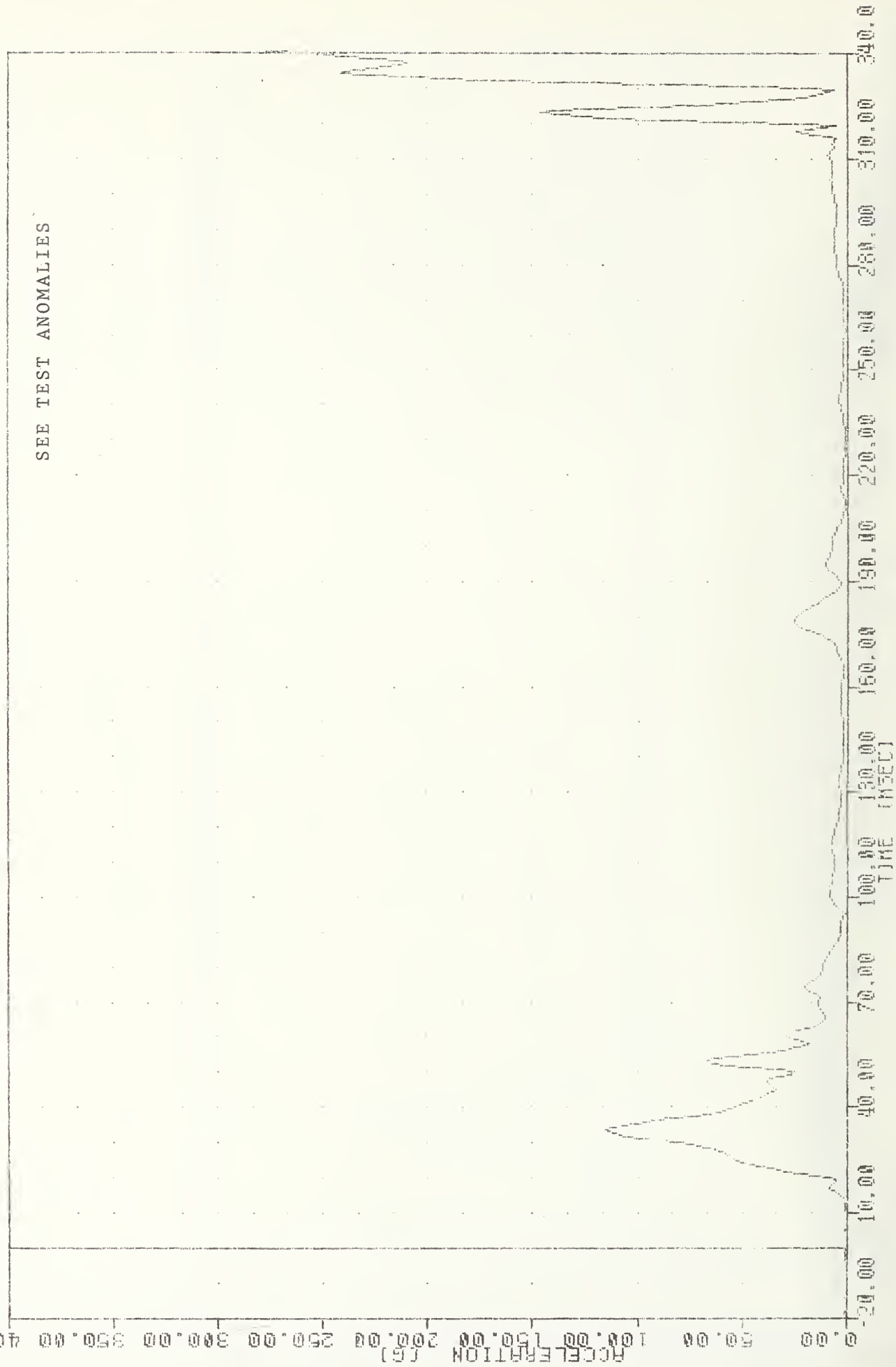
MIN. MAX VALUES = -13.56e 68.75, 17.10 e 50.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER UPPER SPINE ACCELERATION Z AXIS

TRC , 8:0930
EVALUATION OF MOD YW FLEET
832730000000
101RG1

PLOT DATE 4-OCT-83 10:47:45
FILTER : HSR1 136/ 169/ -50
MIN. MAX VALUES = 0.060 -6.88 276.52 340.00

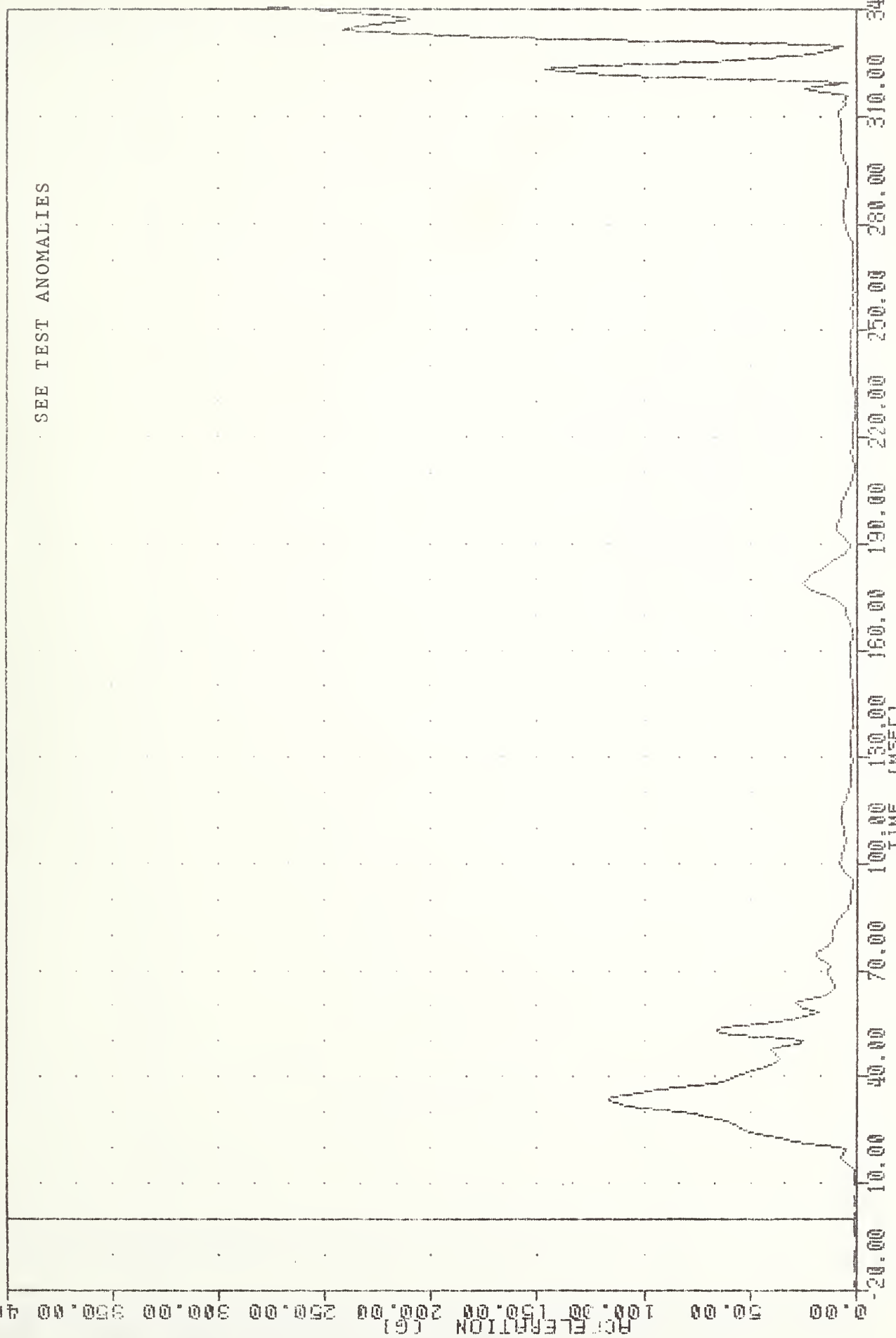


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE RESULTANT

TRC 830930
 EVALUATION OF MOD YW FLEET
 832730000000
 T01RG1

PL01 DATE 4-ULI-83 10:48:47

FILTER = HSR1 136/ 189/ -50
 MIN, MAX VALUES = 0.142 -7.50, 278.52 @ 340.00



SEE TEST ANOMALIES

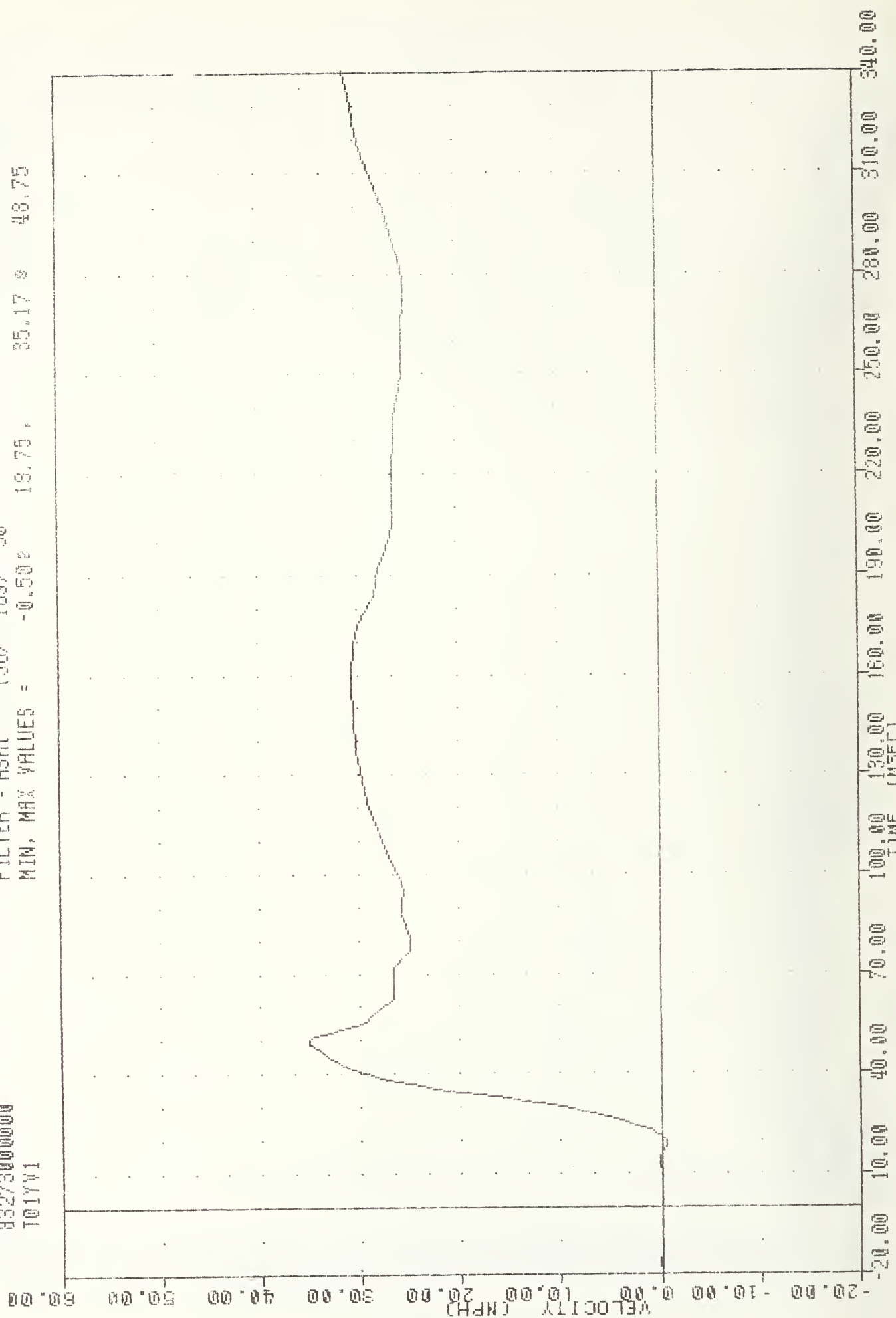
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER UPPER SPINE RESULTANT USING TQ1YGA

TRC , 830930
 EVALUATION OF MOD VN FLEET
 832730000000
 T01YV1

PLOT DATE 4-OCT-83 13:39:37

FILTER = HSRI 136/ 189/ -50

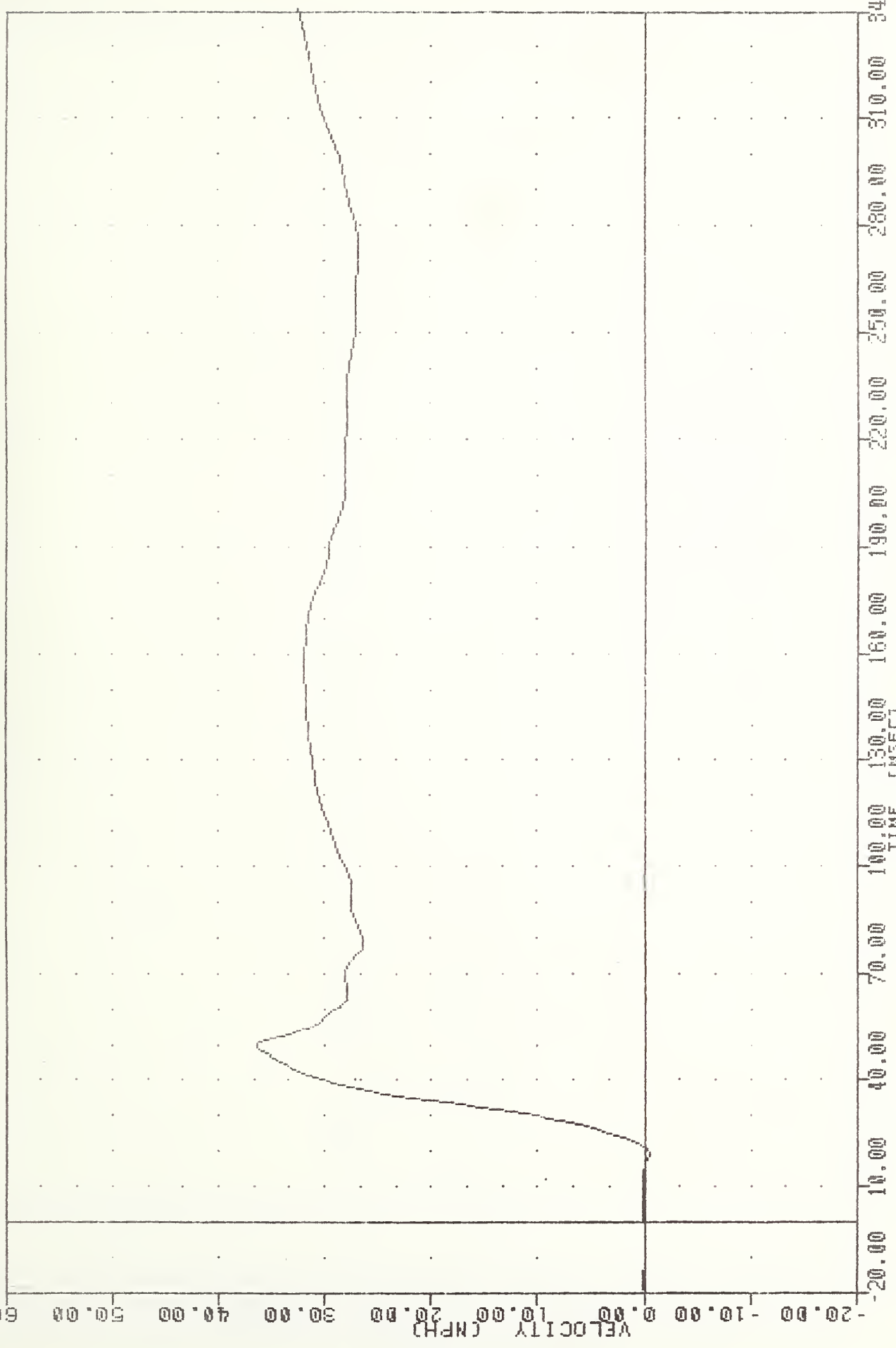
MIN. MAX VALUES = -0.502 18.75 35.17 48.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T01Y61

TRC , 830930
 EVALUATION OF MOD VW FLEET
 83273000000
 T01YVA

PLOT DATE 4-OCT-83 13:39:00
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.440 18.75, 36.35 0 48.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T01Y6A

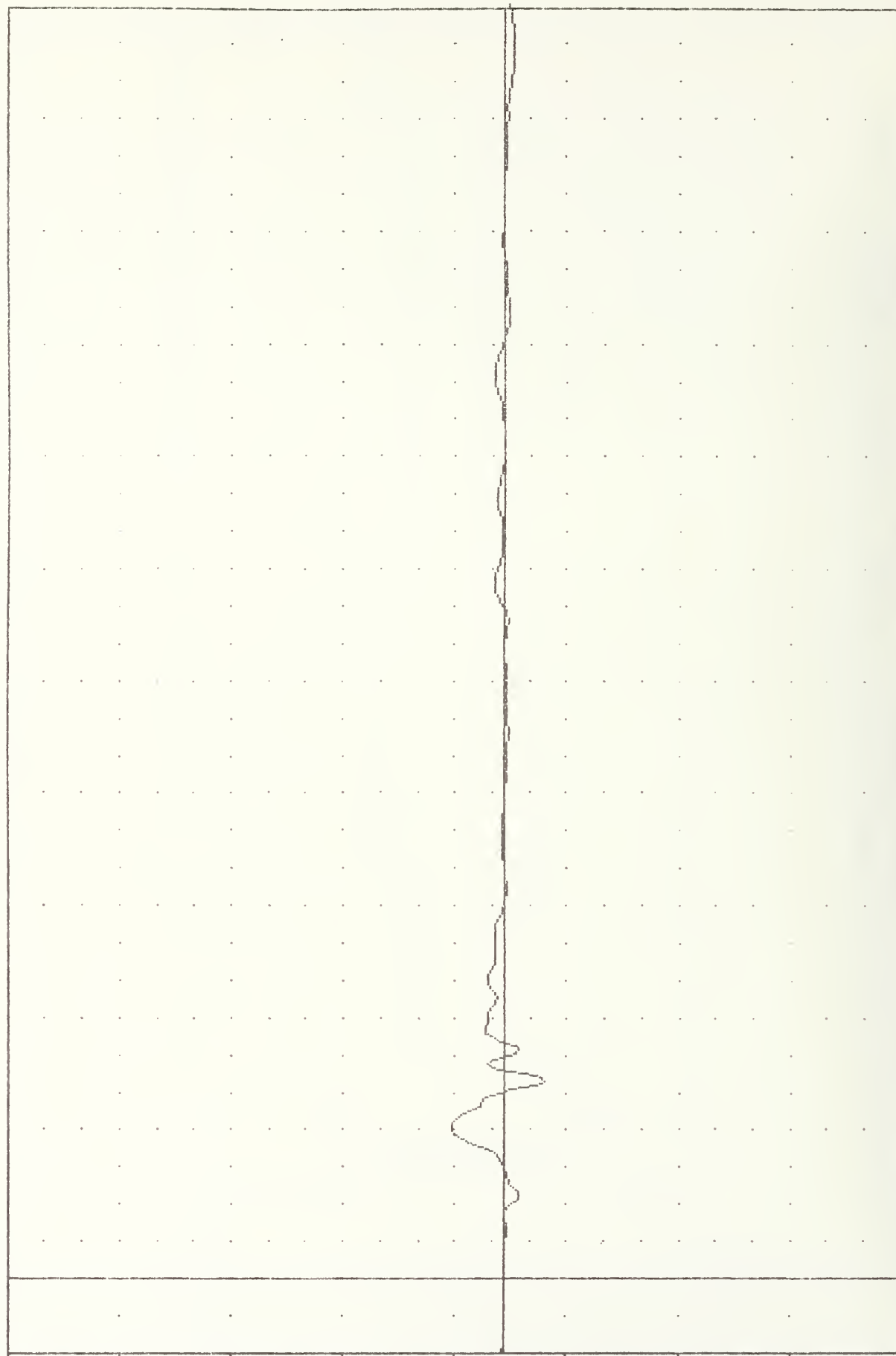
TBC
EVALUATION OF MDO VW FLEET
83273000000
T12XG1

PLOT DATE 4-007-83 10:47:45

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -32.91% 52.50, 43.25 % 40.63

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE ACCELERATION X AXIS

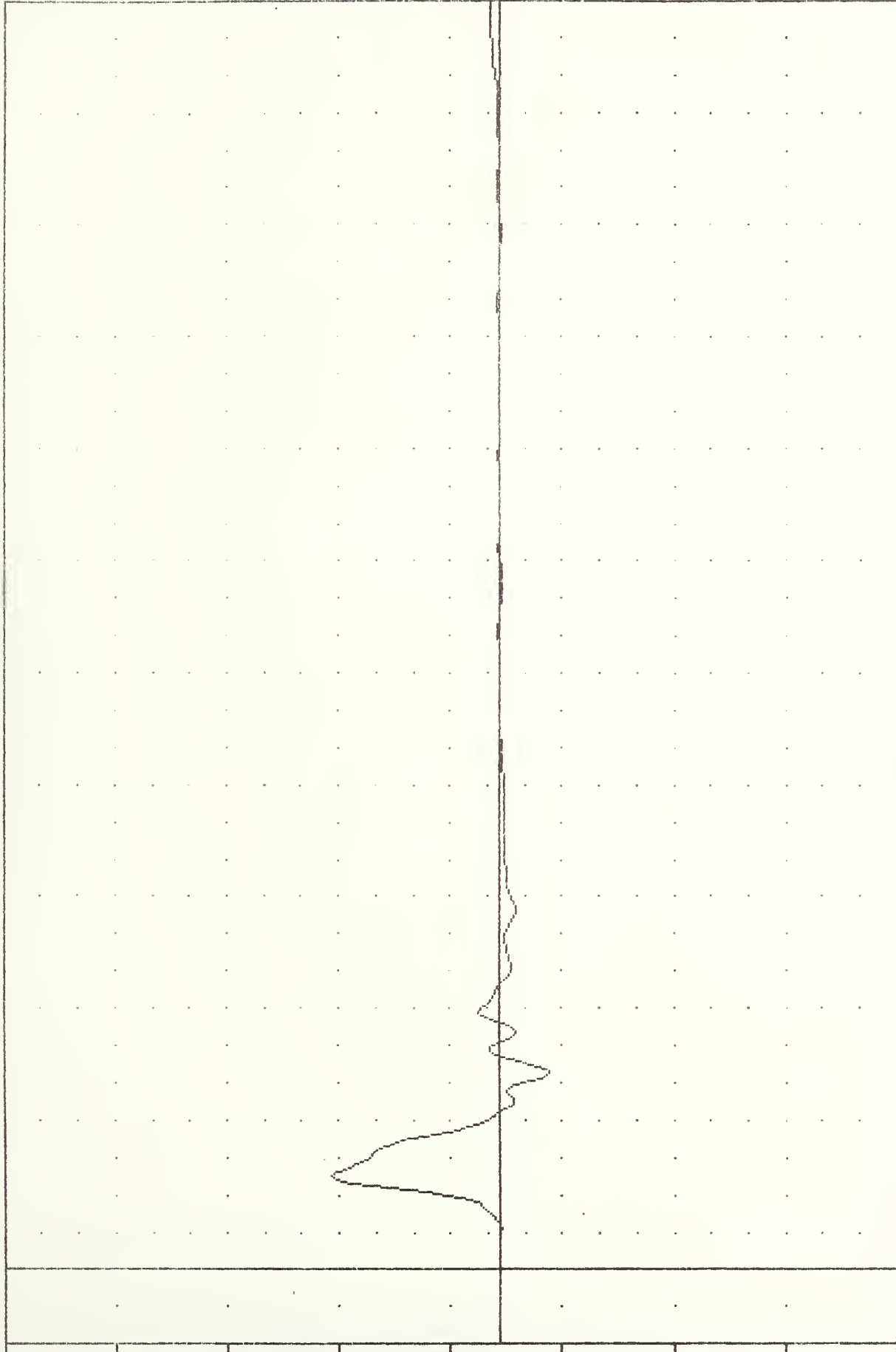
TAC , 830930
EVALUATION OF MOD VW FLEET
832730000000
T12Y61

PLOT DATE 4-OCT-83 10:47:45

FILTER = HSRI 136/ 139/ -50

MIN, MAX VALUES = -40.41g 51.88g 135.51g 24.38g

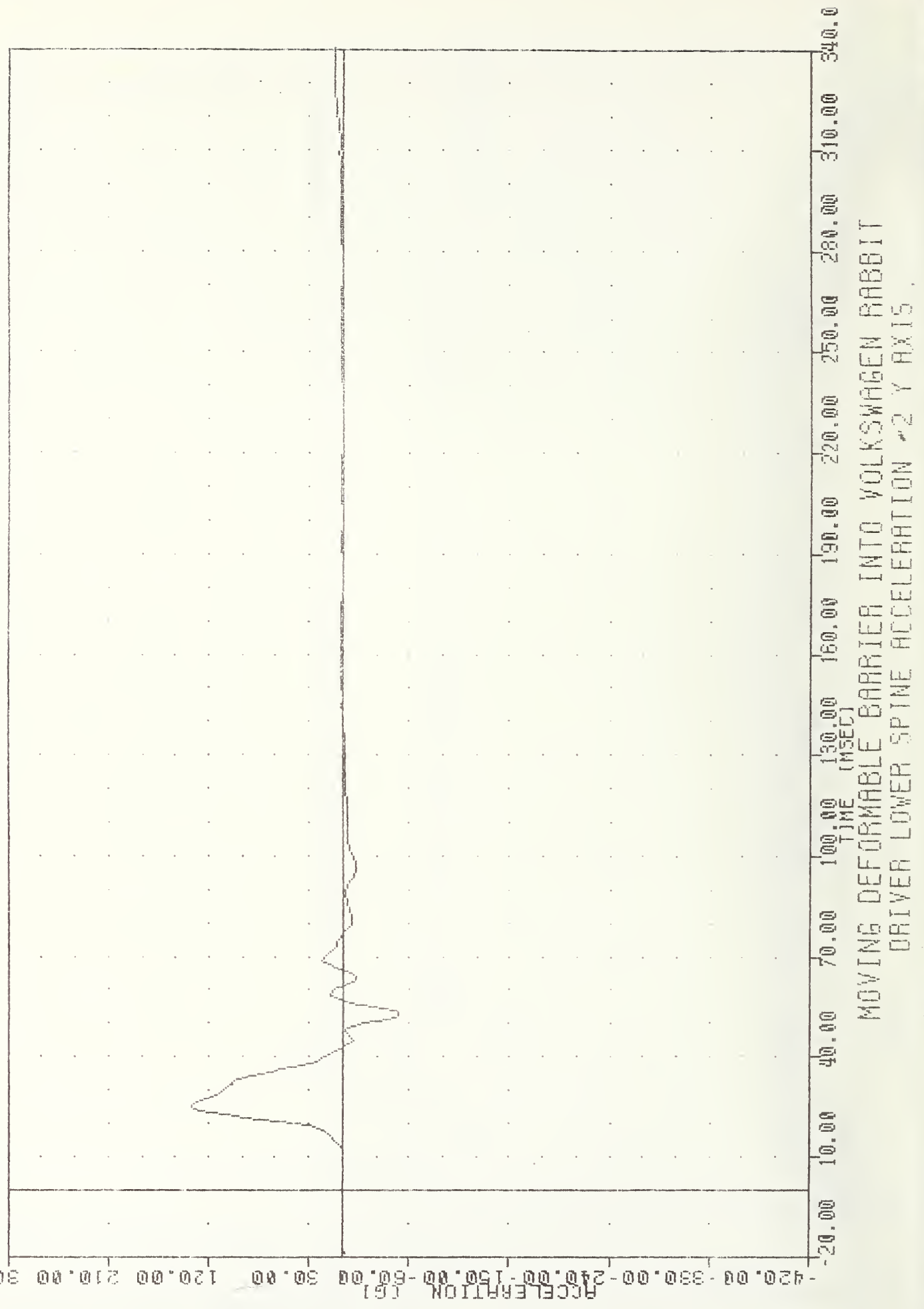
ACCELERATION (G)



TIME (msec)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE ACCELERATION Y AXIS

TRC 830930 4-UCT-83 10:47:45
 EVALUATION OF MOD VN FLEET
 83273000000
 712YGA
 FILTER = HS61 136/ 189/ -50
 MIN, MAX VALUES = -50.838 51.88 135.45 24.38

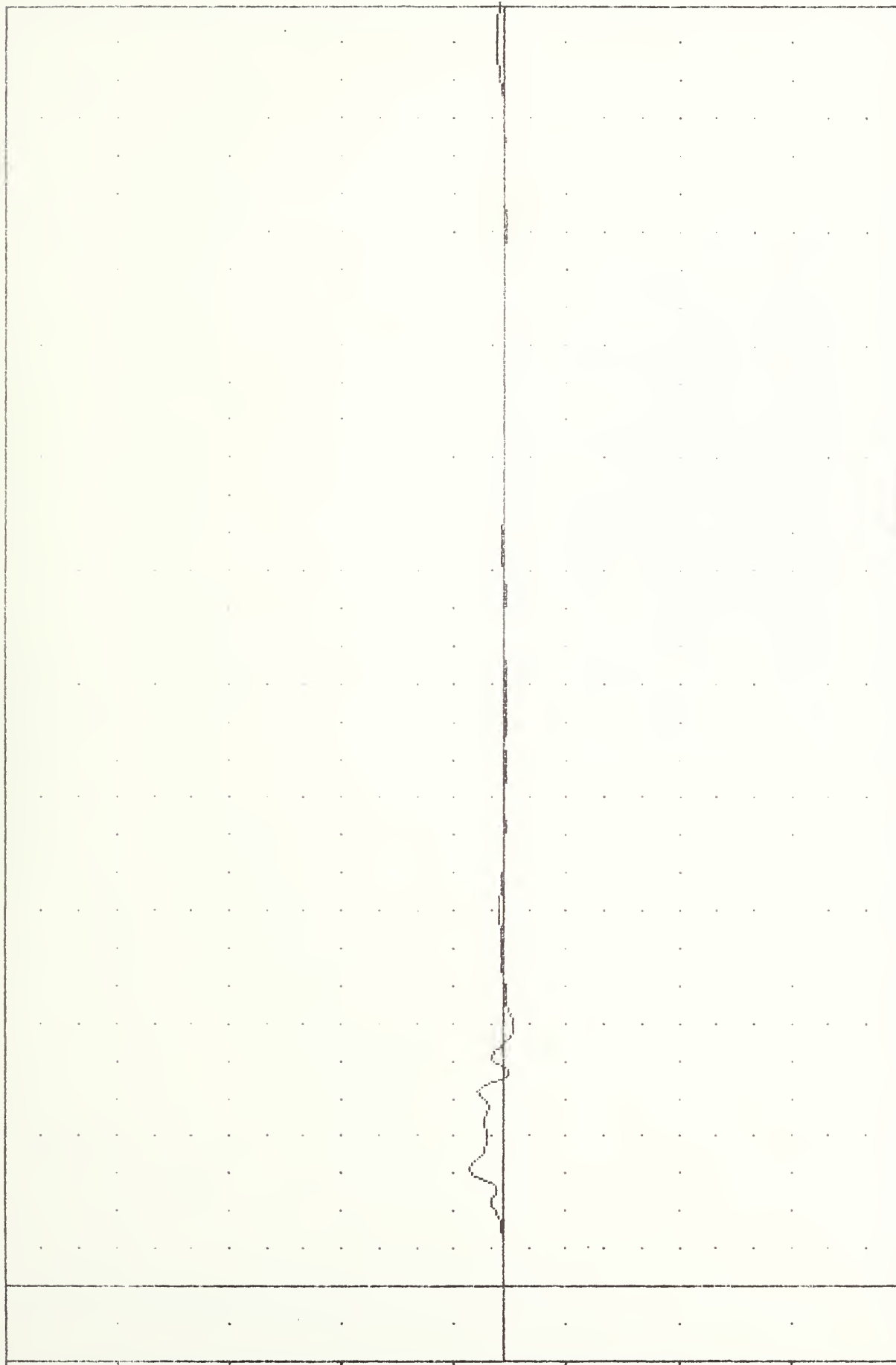


TRC 830930
EVALUATION OF MOD VW FLEET
832730000000
T12Z61

PLOT DATE 4-ULF-83 18:47:45

FILTER = HSM 136/ 189/ -50
MIN, MAX VALUES = -7.768 58.75, 27.40 & 30.62

ACCELERATION (G)

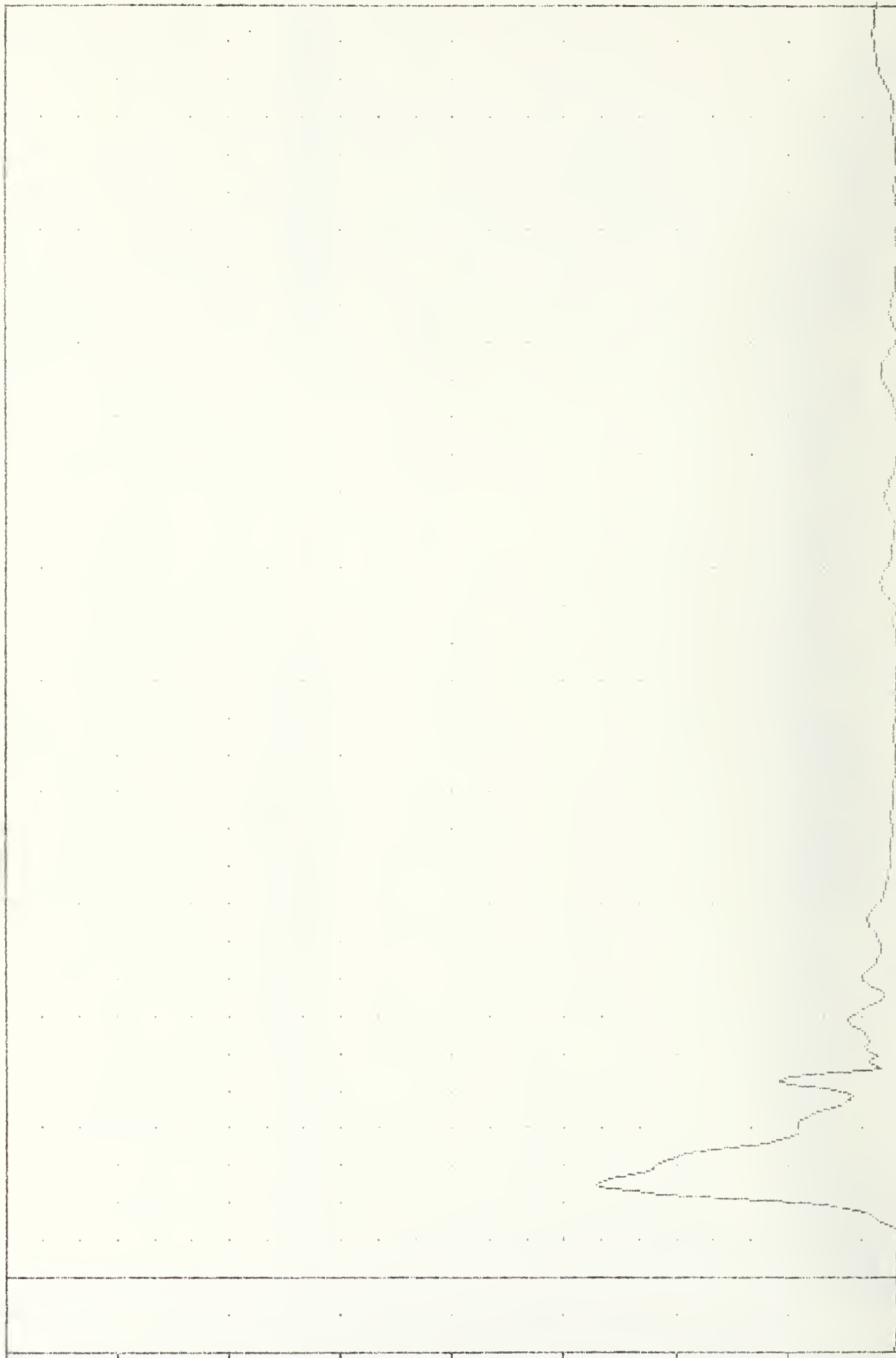


TAC
EVALUATION OF MOD VW FLEET
832730000000
T12R61

PLOT DATE 4-11-83

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = 0.182 -12.56 155.73 24.38

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

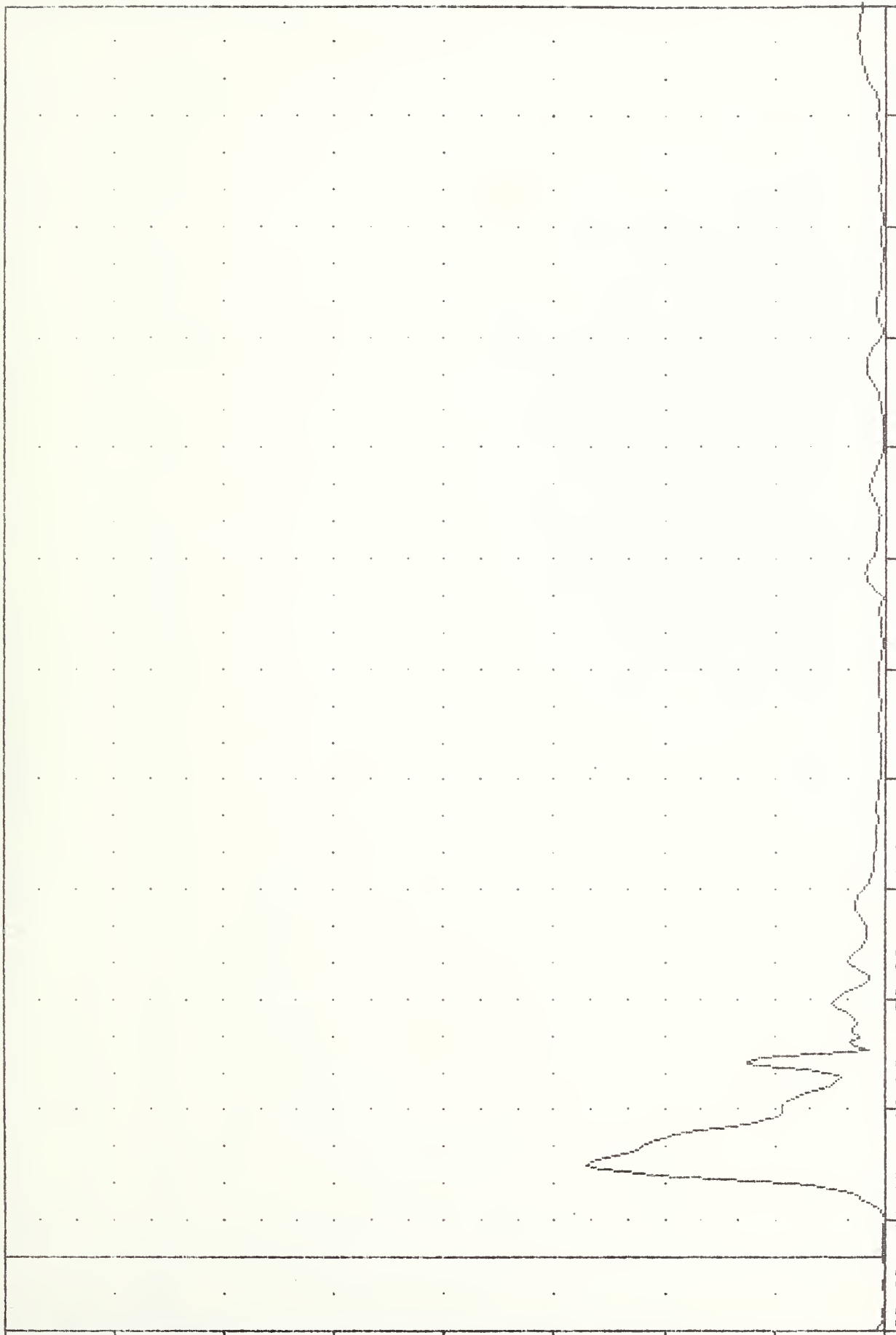
TRC
EVALUATION OF MDD VW FLEET
832730000000
T12R61

PL01 DATE 4-ULF-83 10:48:47

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.17% -13.13, 135.67 @ 24.38

ACCELERATION (G)



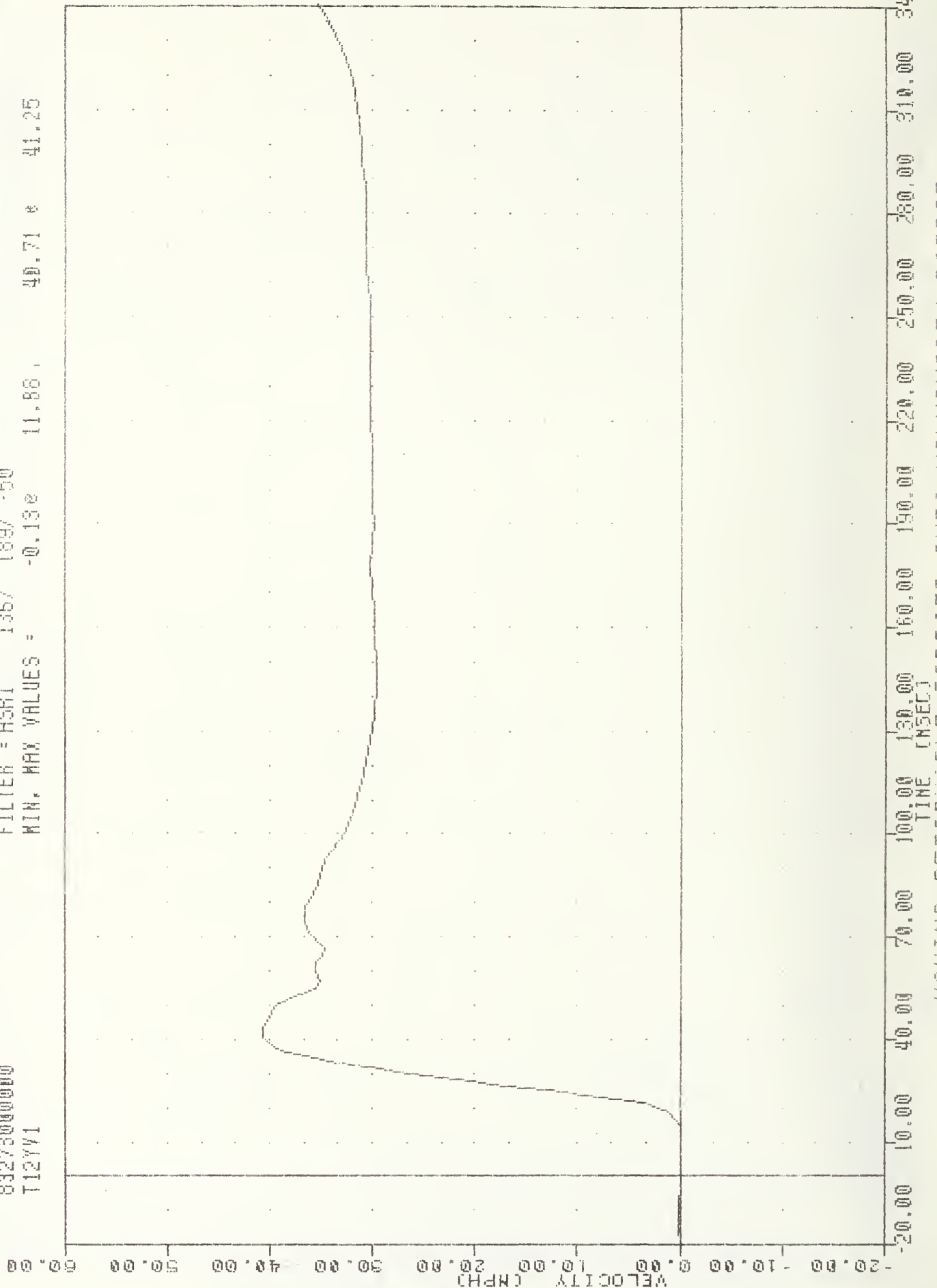
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE RESULTANT USING T12YGA

TRC , 830930
 EVALUATION OF HOO VW FLEET
 832730000000
 T12YV1

PLOT DATE 4-OCT-83 13:38:37

FILTER = HSRI 136/ 189/ -50

WIN. MAX VALUES = -0.130 11.88 40.71 41.25



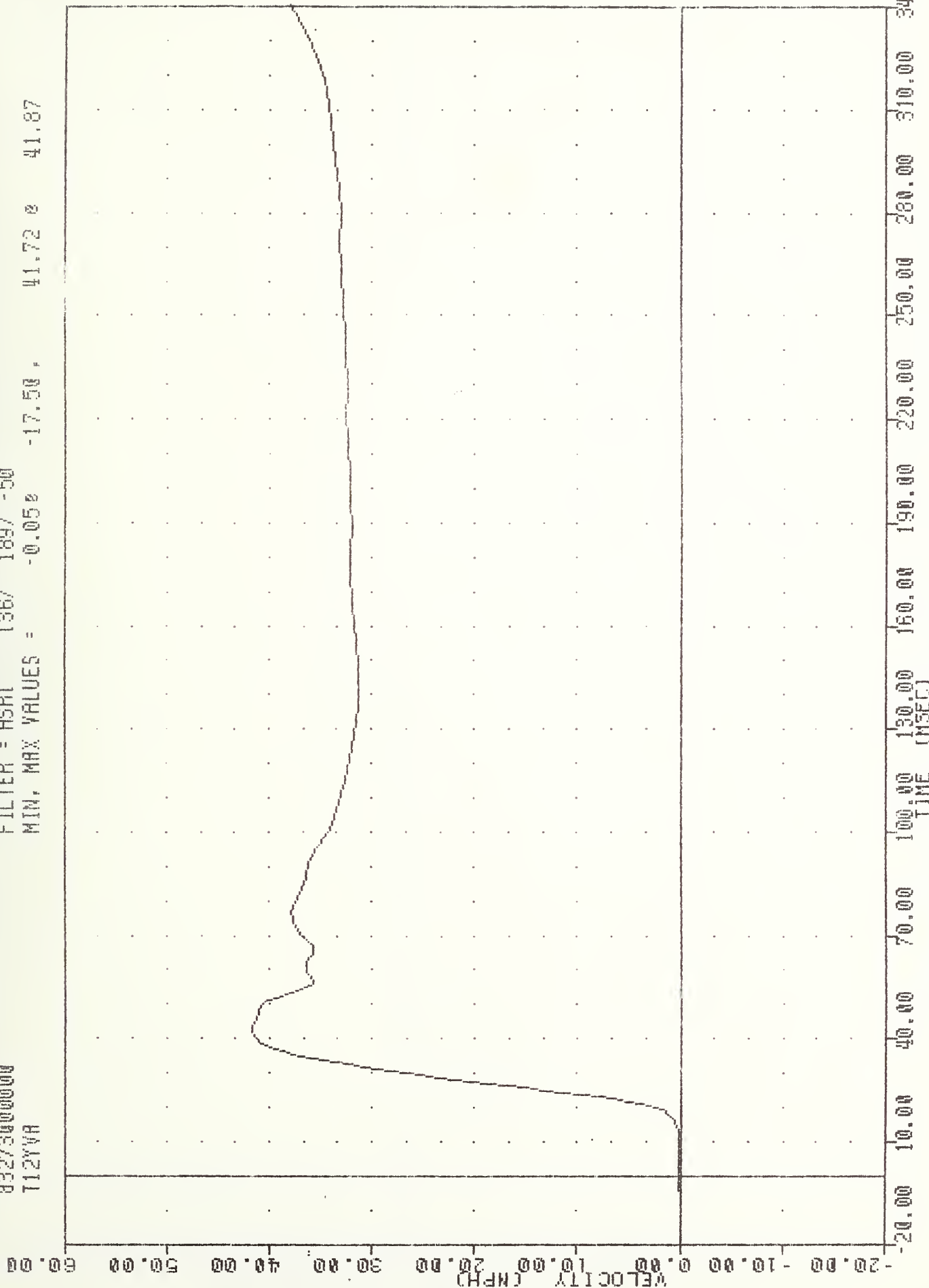
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T12YV1

TRC , 830930
 EVALUATION OF MOD VW FLEET
 832730000000
 T12YVR

PLOT DATE 4-ULF-83 13:39:37

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.050 -17.50 41.72 41.87



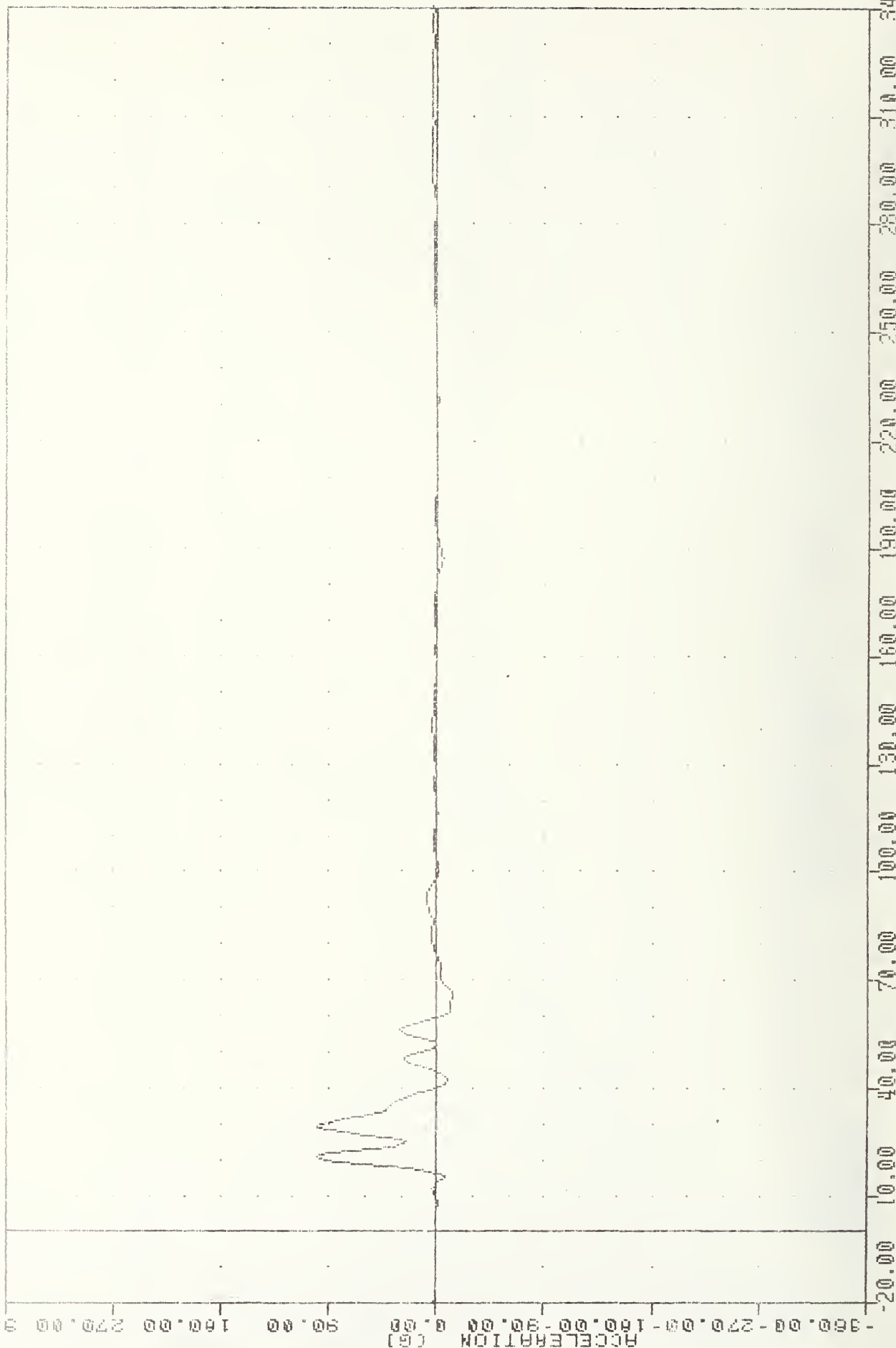
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T12YGA

TAC
EVALUATION OF HOD VW FLEET
83273000000
LURYEI

FLUT DATE 9 OCT 85 10:47.45

FILTER = HSRI 136/ 123/ -50

MIN. MAX VALUES = -12.928 100.67 28.75

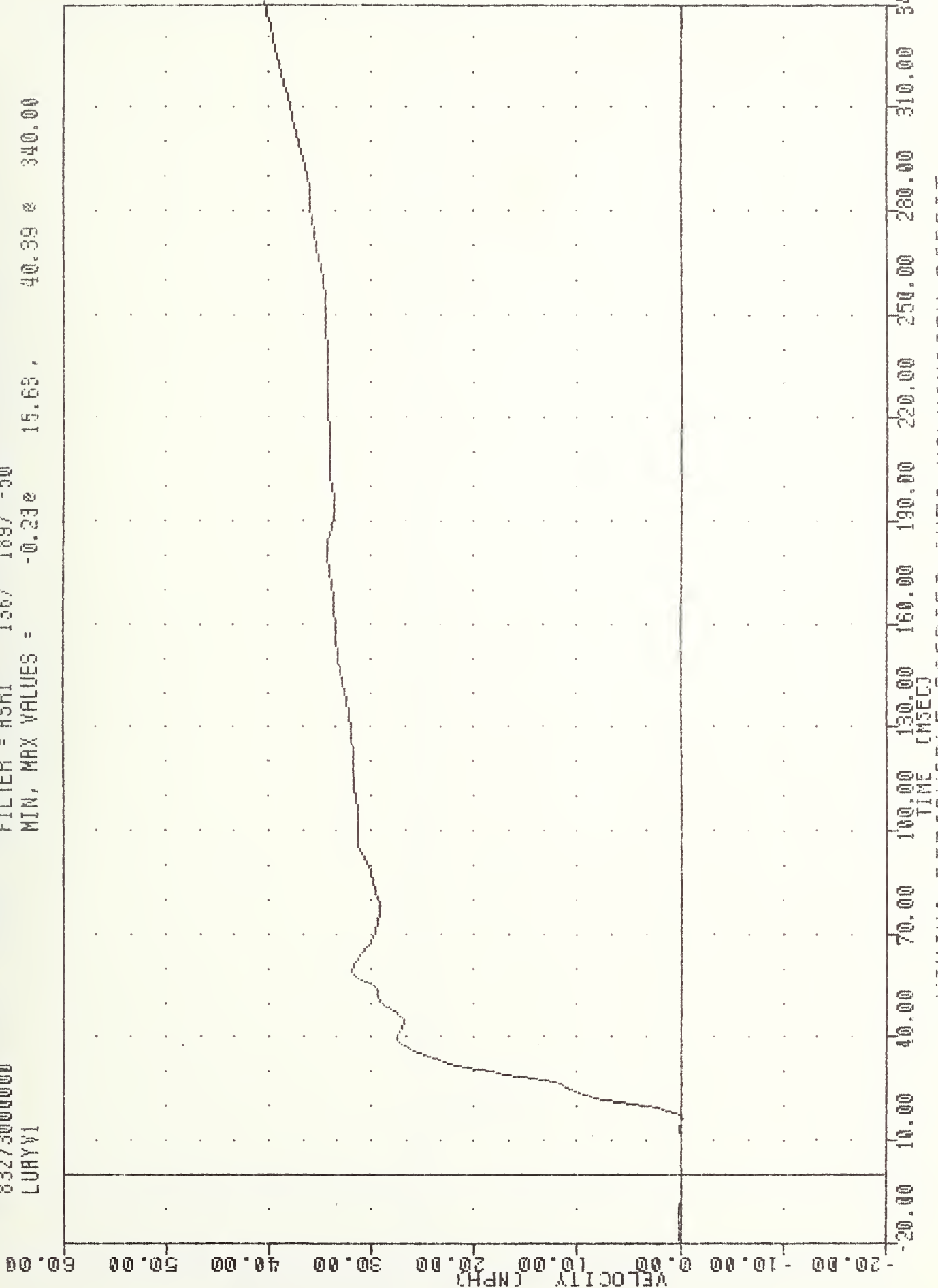


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LEFT UPPER RIB ACCELERATION Y AXIS

TRC 830930
 EVALUATION OF MOD VW FLEET
 832730000000
 LURYV1

PLOT DATE 4-ULF-83 13:39:37

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.23e 15.63, 40.39 e 340.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LURY61

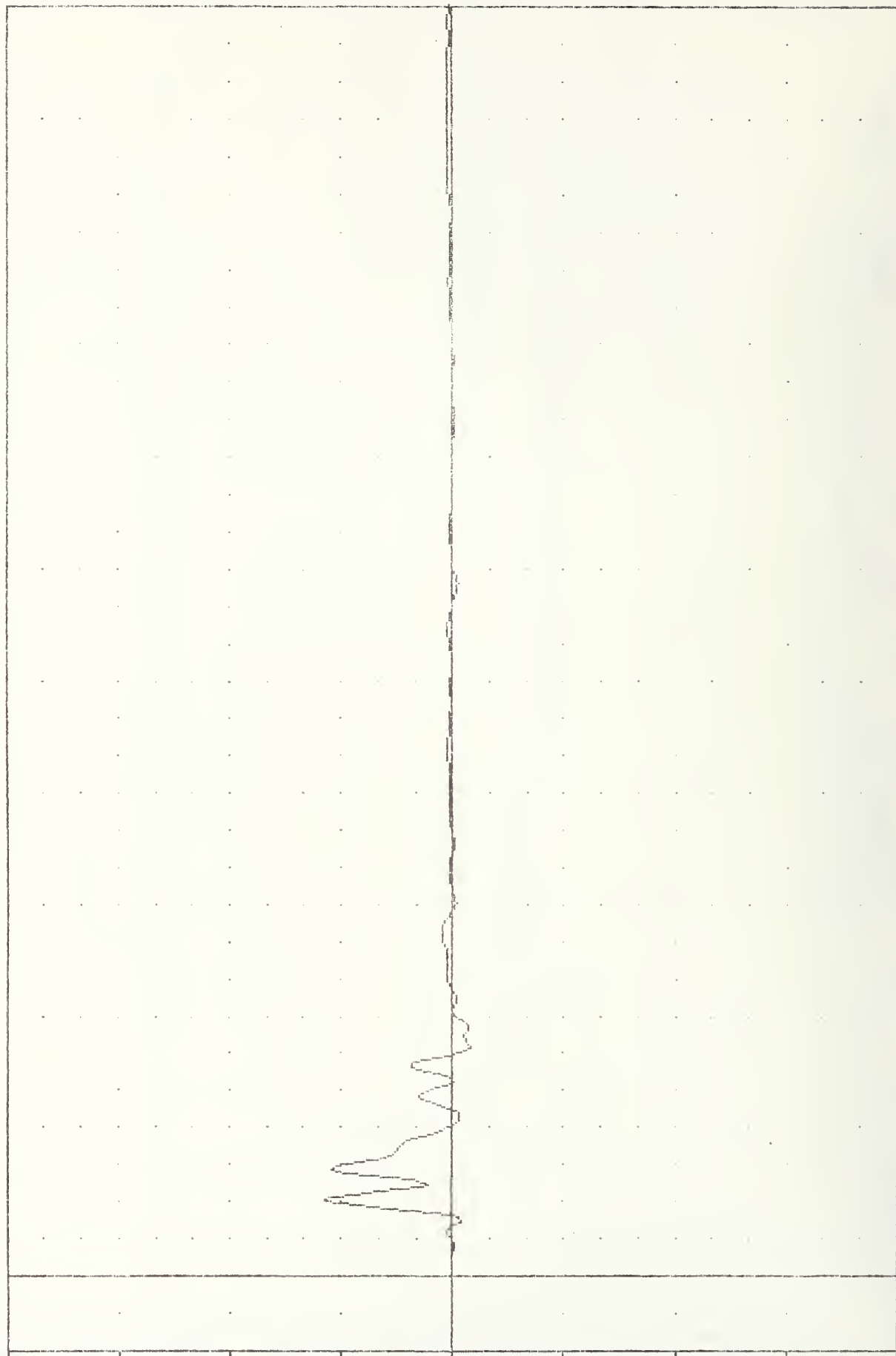
TRC 830930
EVALUATION OF MOD YW FLEET
832730000000
LURYGA

PLOT DATE 4-MAY-83 1 45

FILTER = HSRI 135/ 189/ -50

MIN. MAX VALUES = -14.30g 61.25 189.5g 20.00

ACCELERATION (G)



-360.00 -270.00 -180.00 -90.00 0.00 90.00 180.00 270.00 360.00

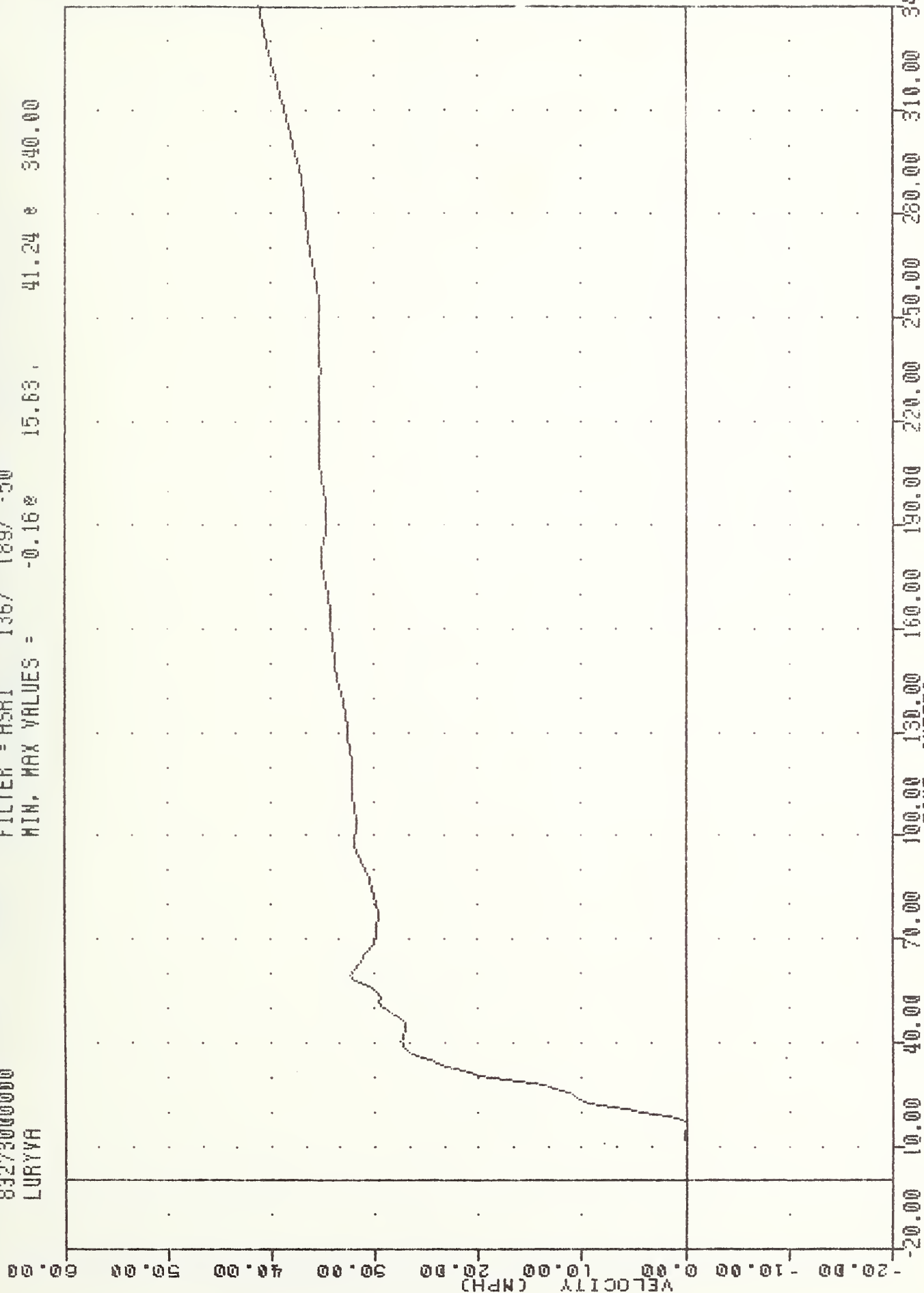
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LEFT UPPER RIB ACCELERATION -2 Y AXIS

TAC , 83W930
 EVALUATION OF MOD VW FLEET
 83273000000
 LURYVA

PLOT DATE 4-JUL-83 13:39:37

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.168 15.63, 41.24 & 340.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LURYGA

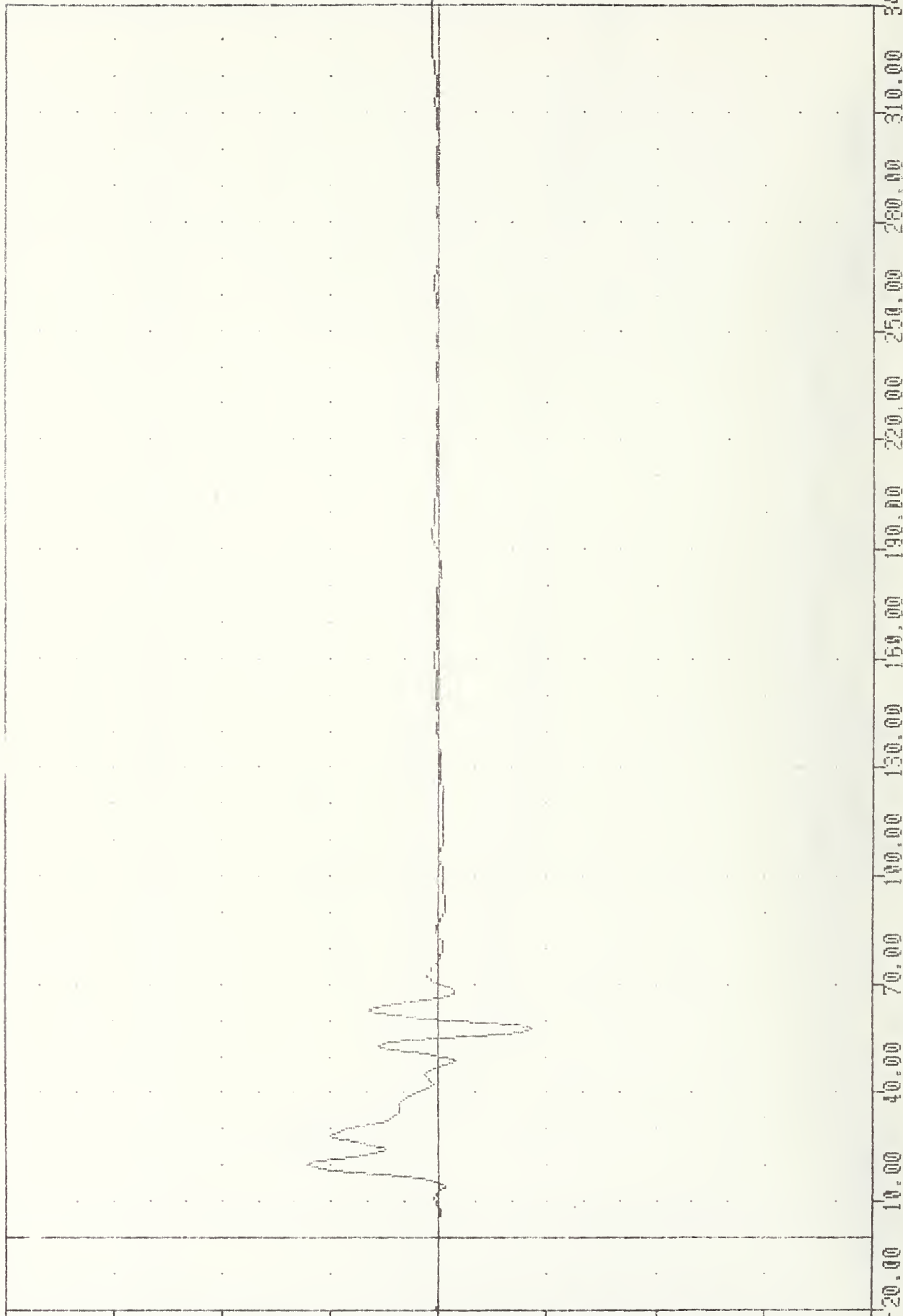
TRC 830930
 EVALUATION OF MOD VW FILE
 83273000000
 LLAG1

PLOT DATE 4-OCT-83 18:47:45

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -78.652 56.87 110.04 19.38

ACCELERATION (G)



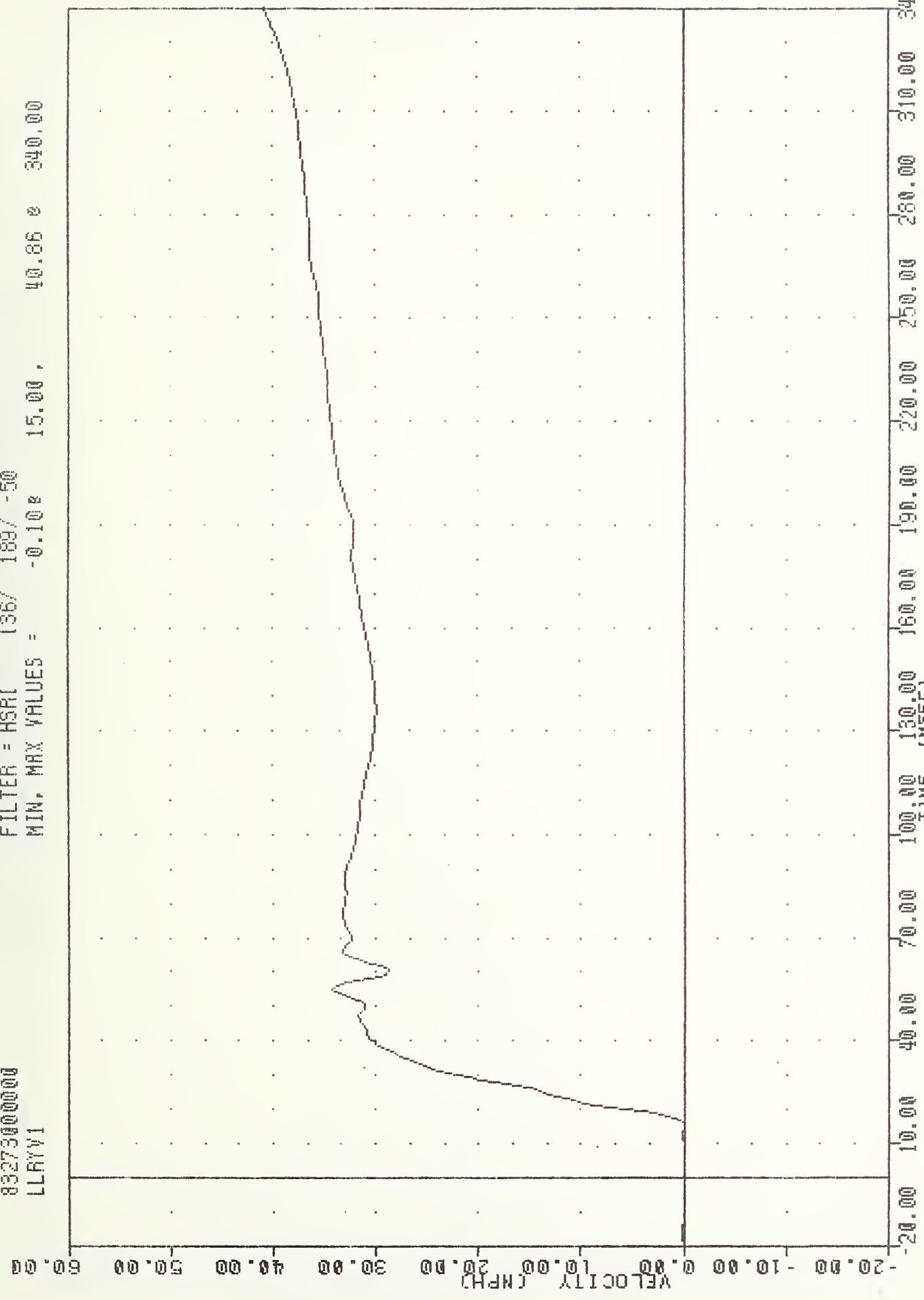
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LEFT LOWER RIB ACCELERATION Y AXIS

TRC , 830930
 EVALUATION OF MOD VV FLEET
 83273000000
 LLRYV1

PLOT DATE 4-ULF-83 13:39:37

FILTER = HSR1 136/ 189/ -50

MIN, MAX VALUES = -0.10e 15.00, 40.86 e 340.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLRYG1

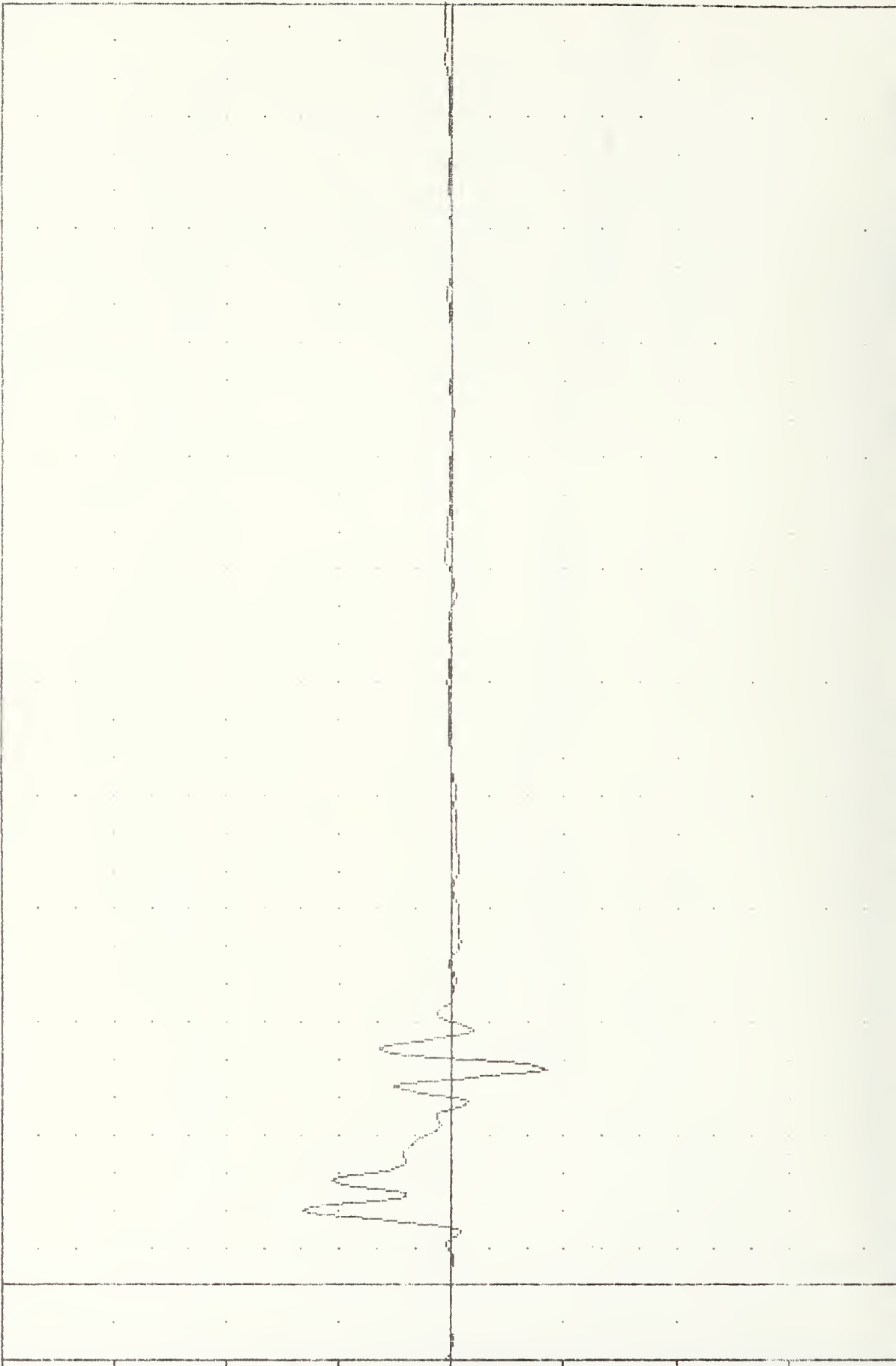
TAC
EVALUATION OF MOD VV FLEET
83273000000
LLAYER

PLOT DATE 4-JUL-83 10:47:45

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -75.91% 56.87% 118.87% 19.38

ACCELERATION (G)



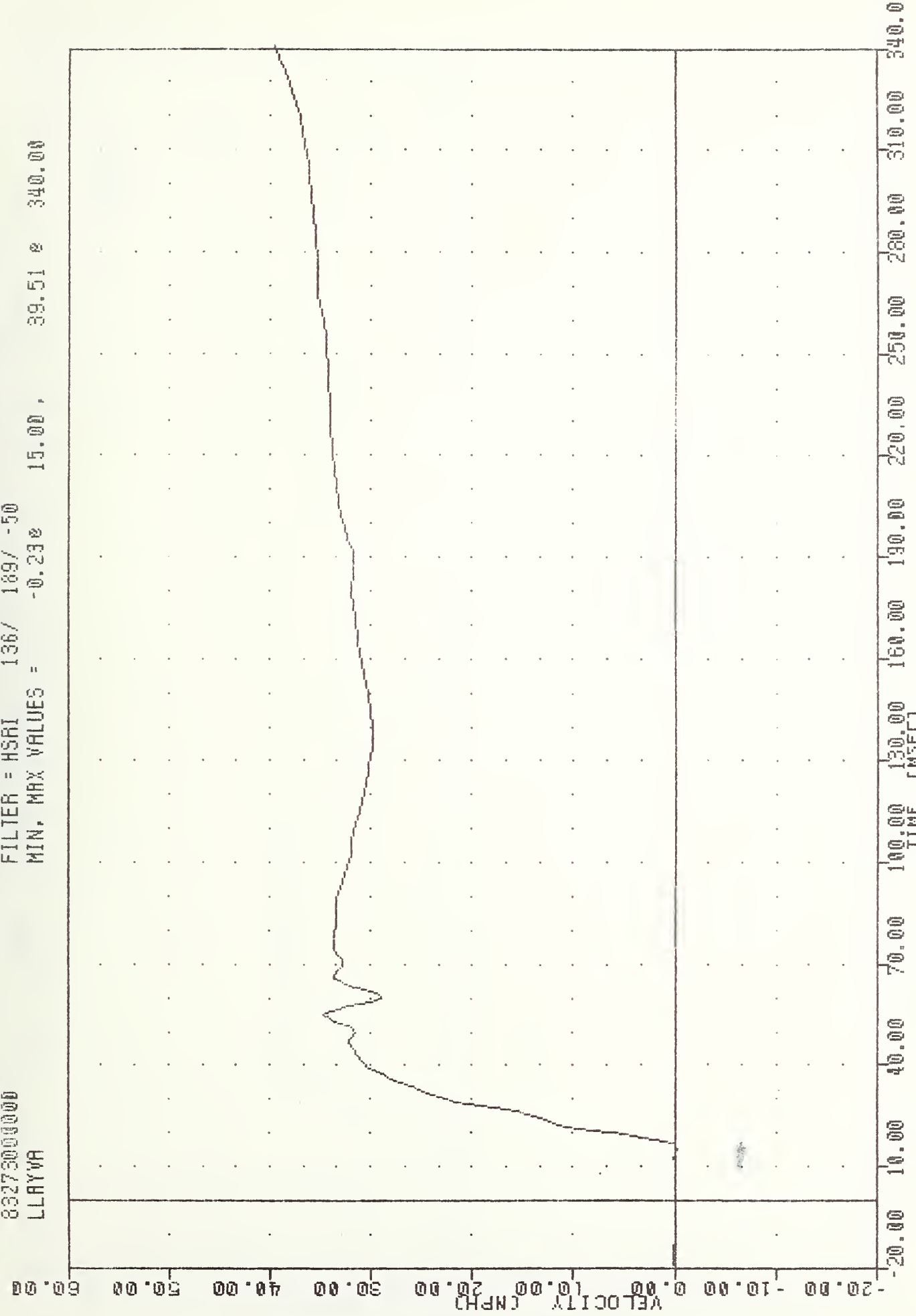
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LEFT LOWER RIB ACCELERATION -Z Y AXIS

TRC , 830930
 EVALUATION OF MDD YW FIFET
 832730000000
 LLAYVA

PLOT DATE 4-OCT-83 13:39:37

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.230 15.00, 39.51 @ 340.00

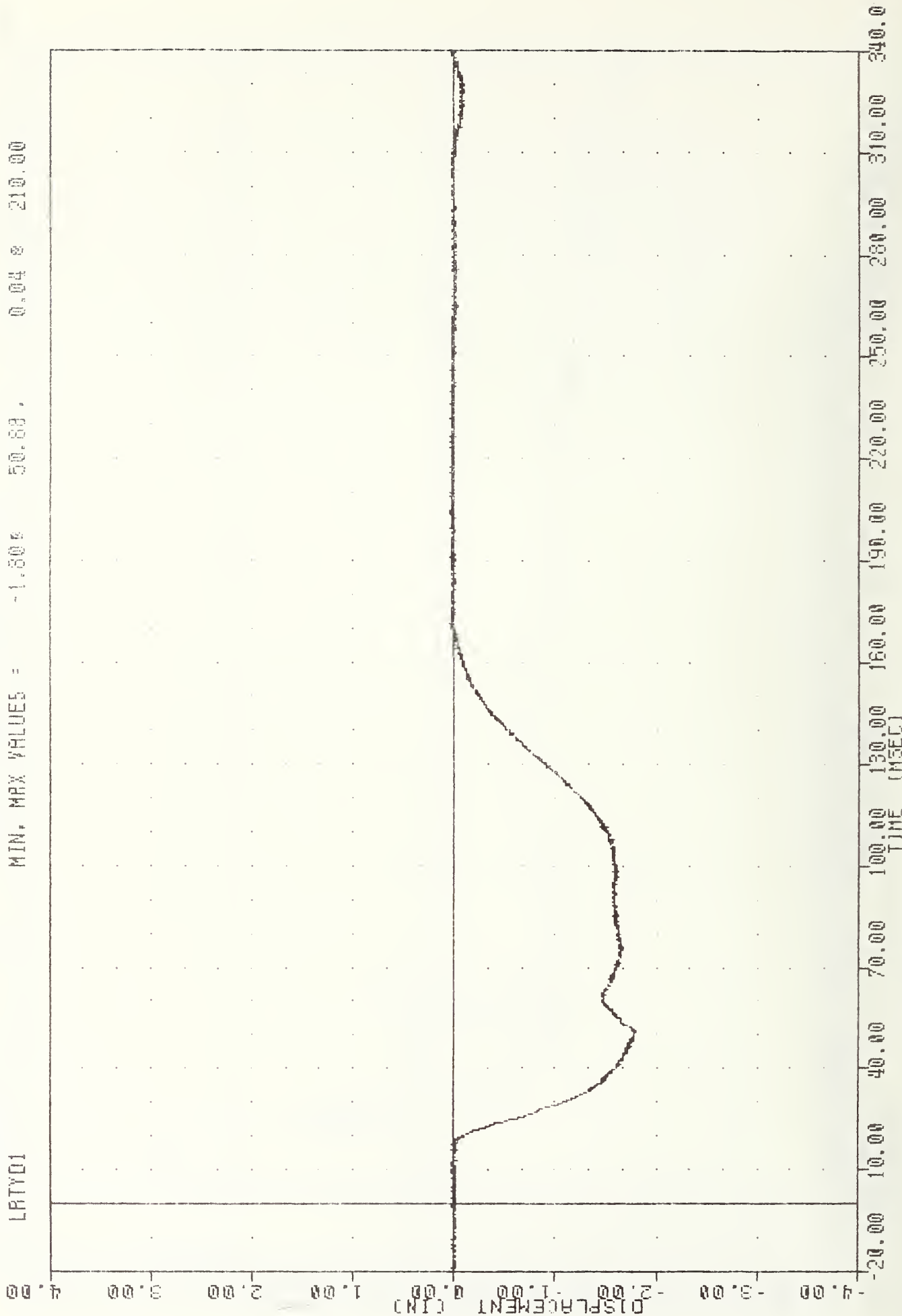


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLAYVA

TRC 830950
 EVALUATION OF MOD VW FLEET
 83273000000
 LRTYD1

PLOT DATE 4-JULY-83 10:45:36

FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = -1.80% 50.88. 0.04 @ 210.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LEFT RIB TO SPINE DISPLACEMENT INCHES

TRC 830930

EVALUATION OF MOD VW FLEET

83273000000

PEVXG1

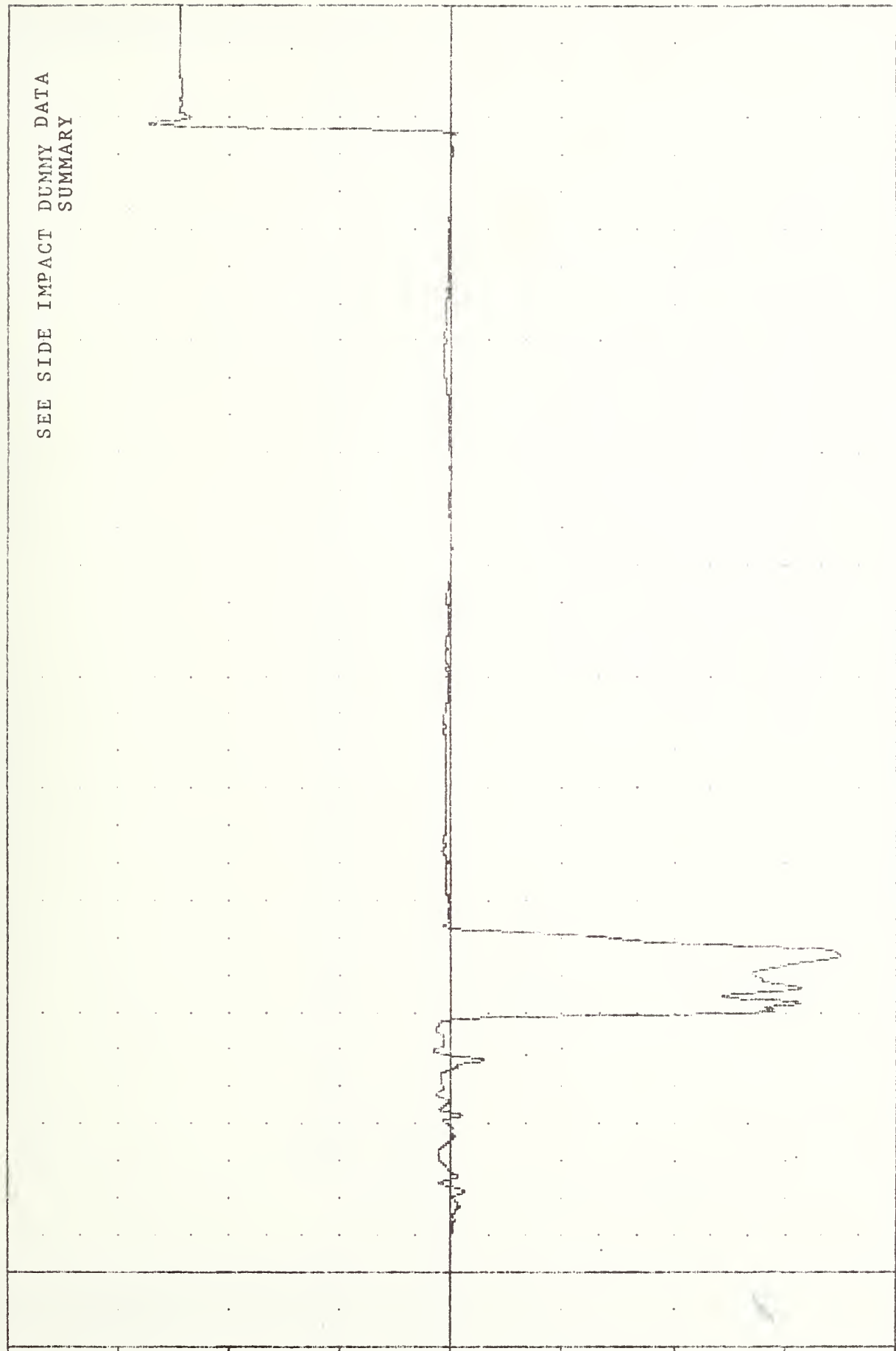
PLU1 DATE 12-01-83 15:30:22

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -280.43% 85.13, 217.69 & 308.13

SEE SIDE IMPACT DUMMY DATA
SUMMARY

ACCELERATION (G)



-320.00 -240.00 -160.00 -80.00 0.00 80.00 160.00 240.00 320.00

0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS ACCELERATION X AXIS

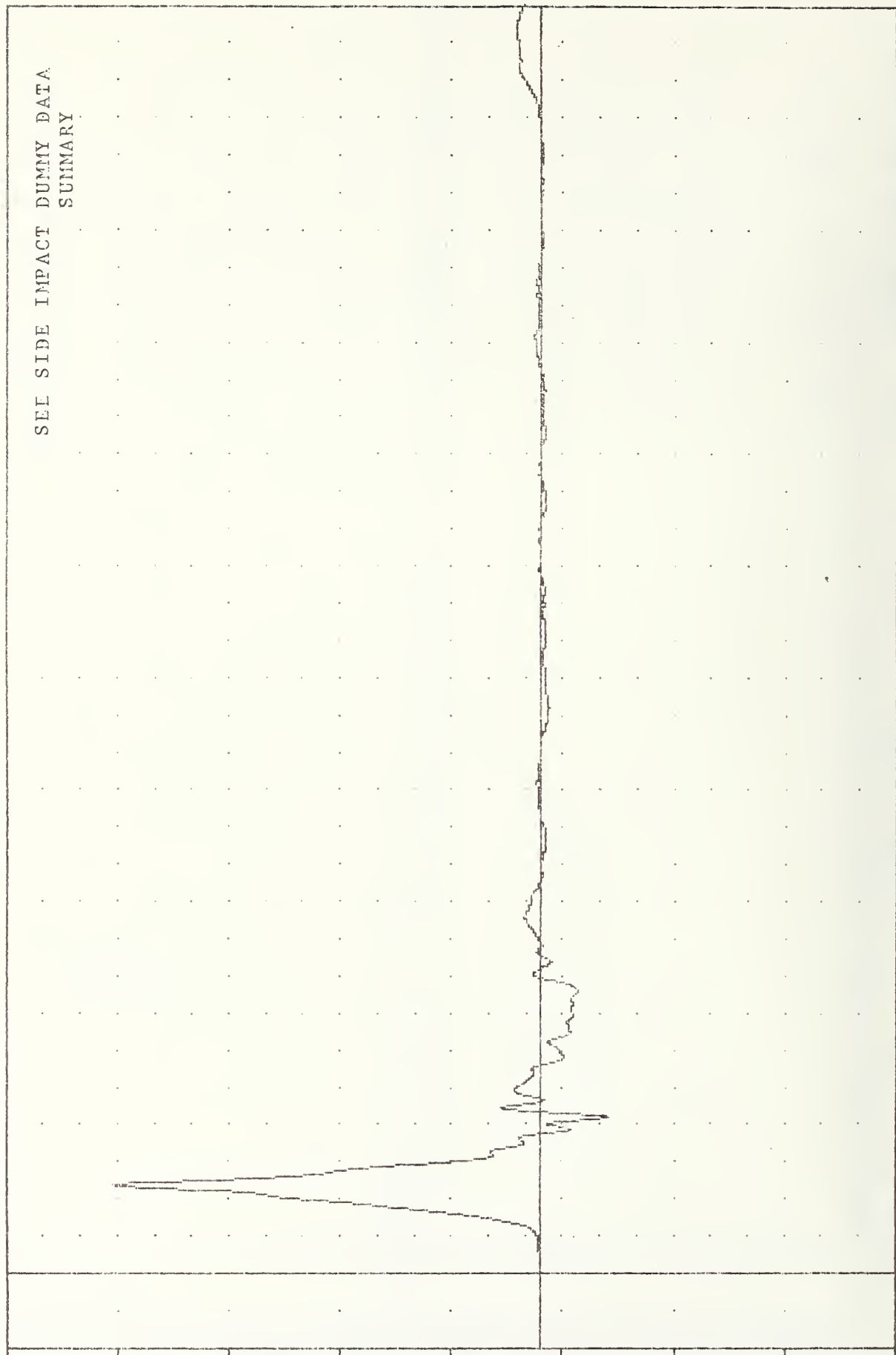
TRC
EVALUATION OF MDD VW FLEET
83273000000
PEVYG1

PLOT DATE 4-OCT-83 10:45:36

FILTER = BLPF 302/ 949/ -40
MIN. MAX VALUES = -30.610 41.75 191.61 23.50

SEE SIDE IMPACT DUMMY DATA
SUMMARY

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS ACCELERATION Y AXIS

TAC , 830930
EVALUATION OF MOD VW FLEET
83273000000
PEVZ61

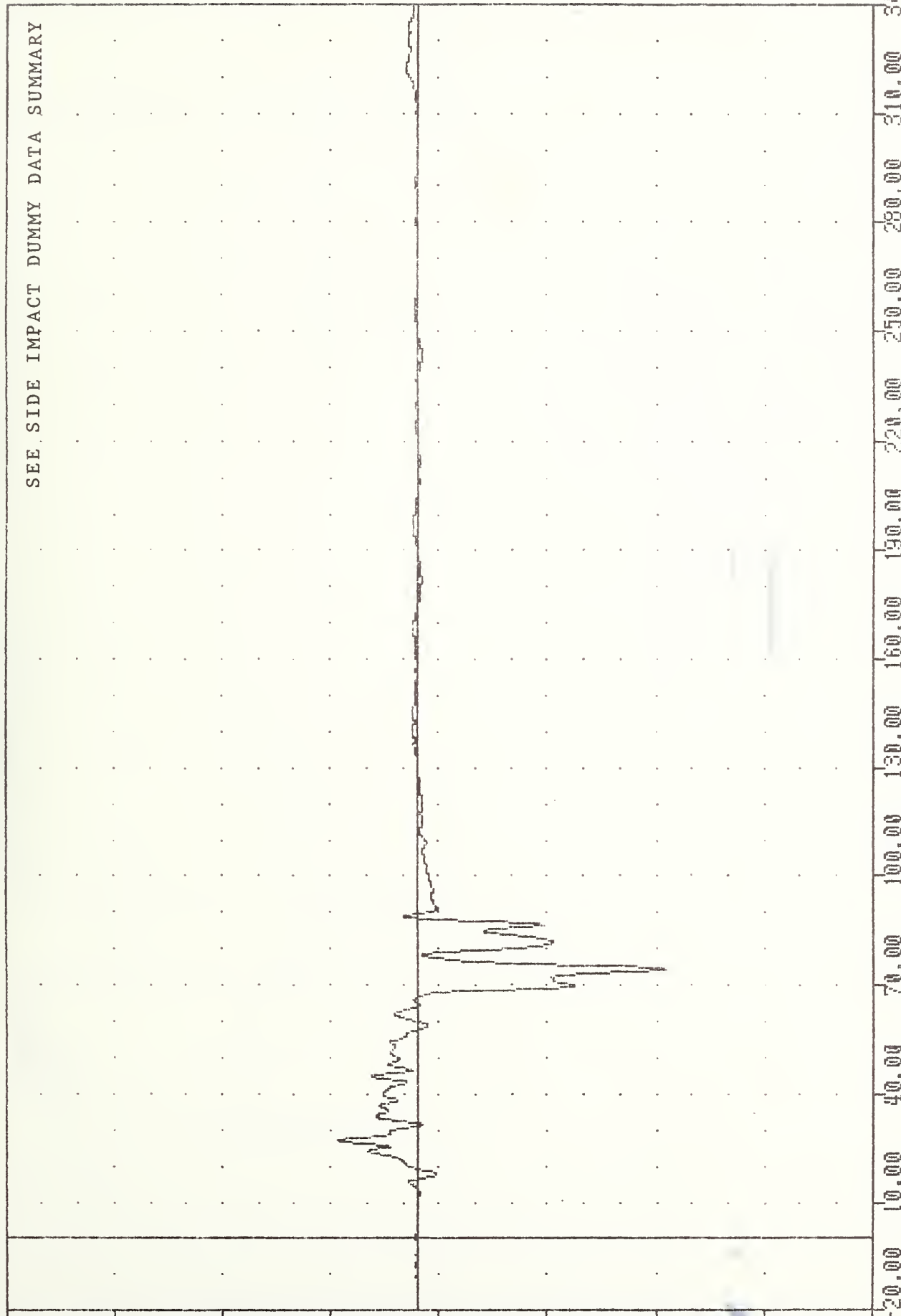
PLOT DATE 4-OCT-83 10:45:36

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -114.57 74.38 36.55 26.88

SEE SIDE IMPACT DUMMY DATA SUMMARY

ACCELERATION (G)



MOWING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS ACCELERATION Z AXIS

TRC 830930
FILM OF MOD - PELLET
032730000000
PEVRG1

PLOT DATE

4-ULF-83

10:45:25

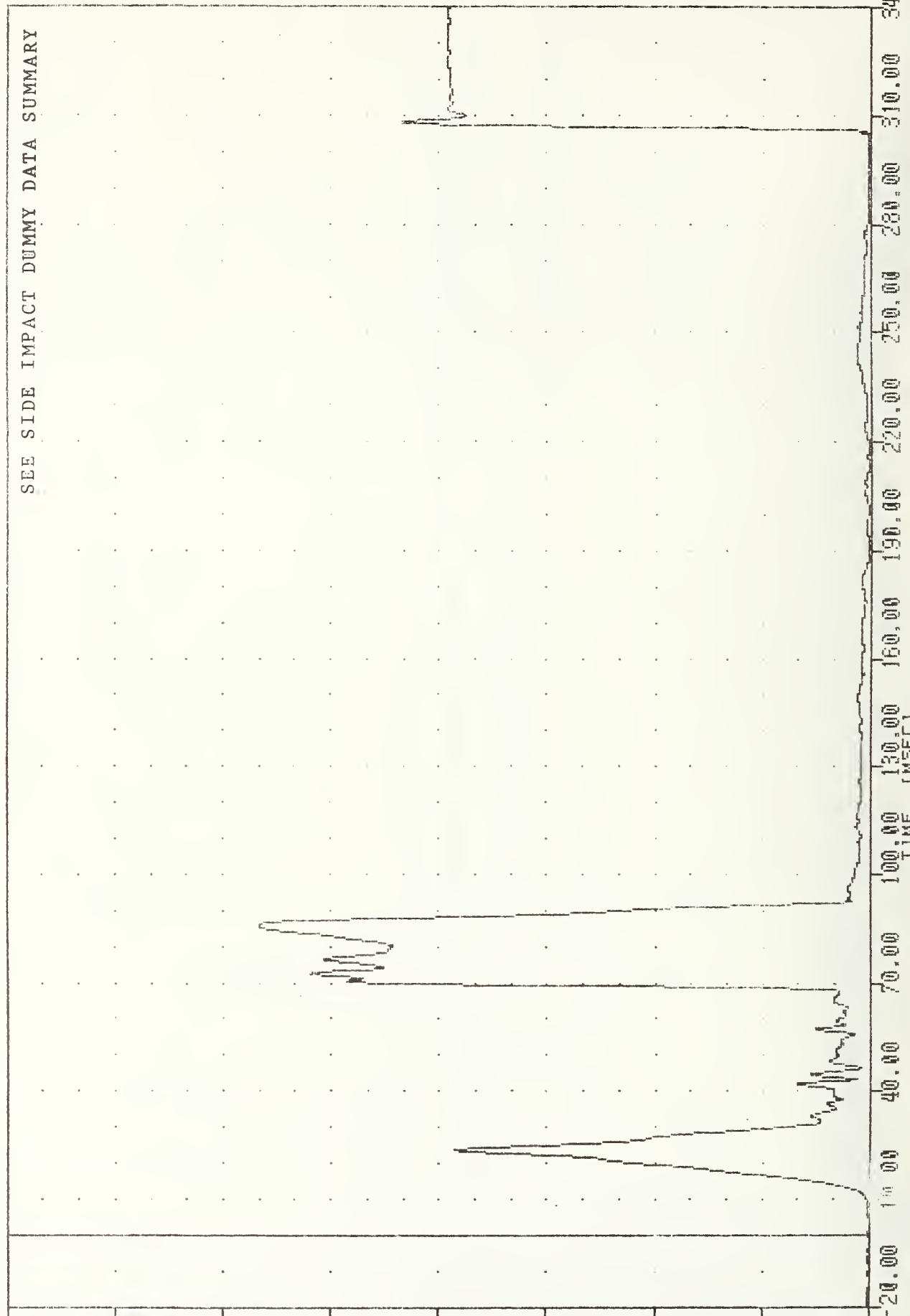
FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 0.000

2.88 282.64 85.38

SEE SIDE IMPACT DUMMY DATA SUMMARY

ACCELERATION (G)

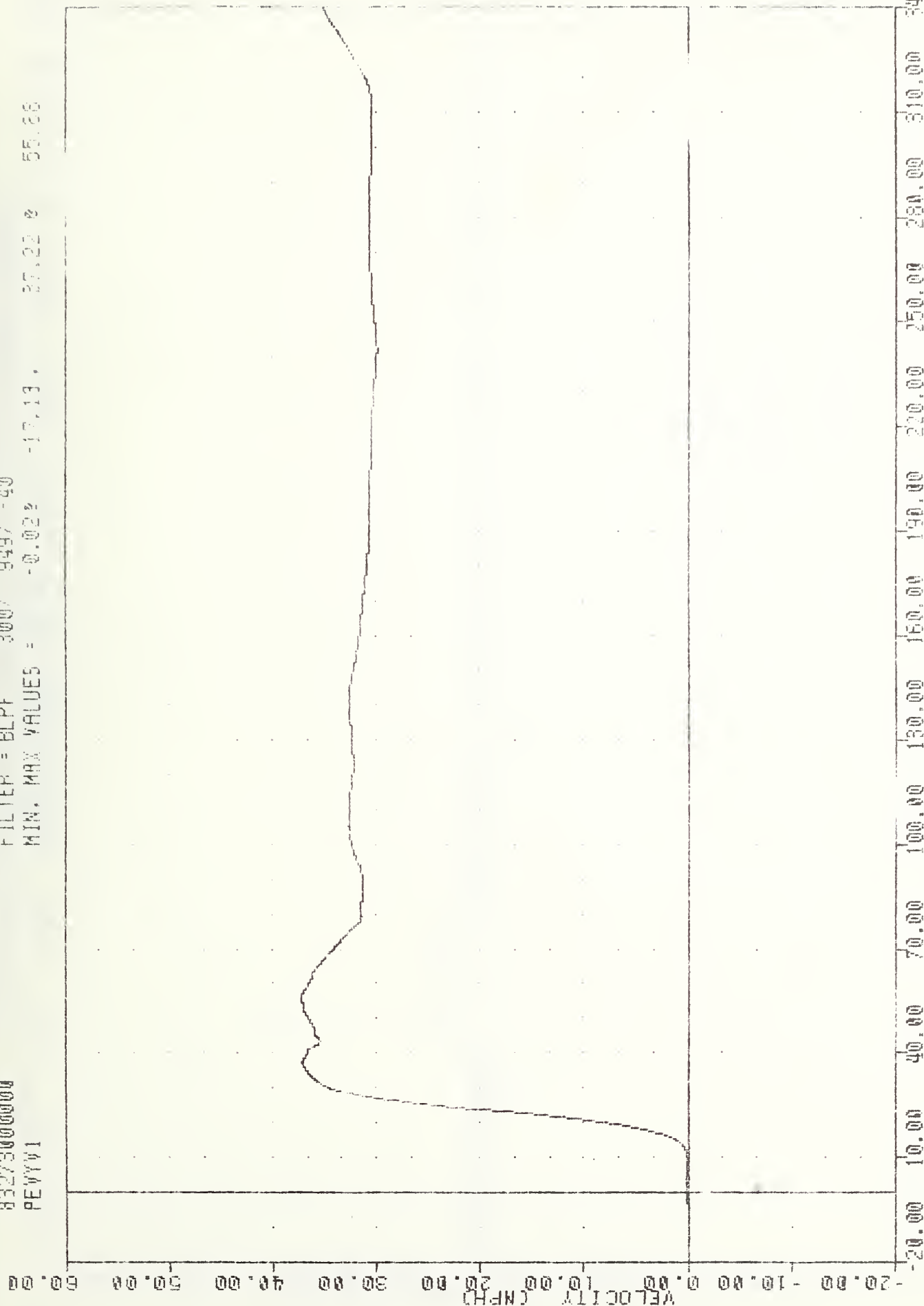


TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DRIVER PELVIS RESULTANT

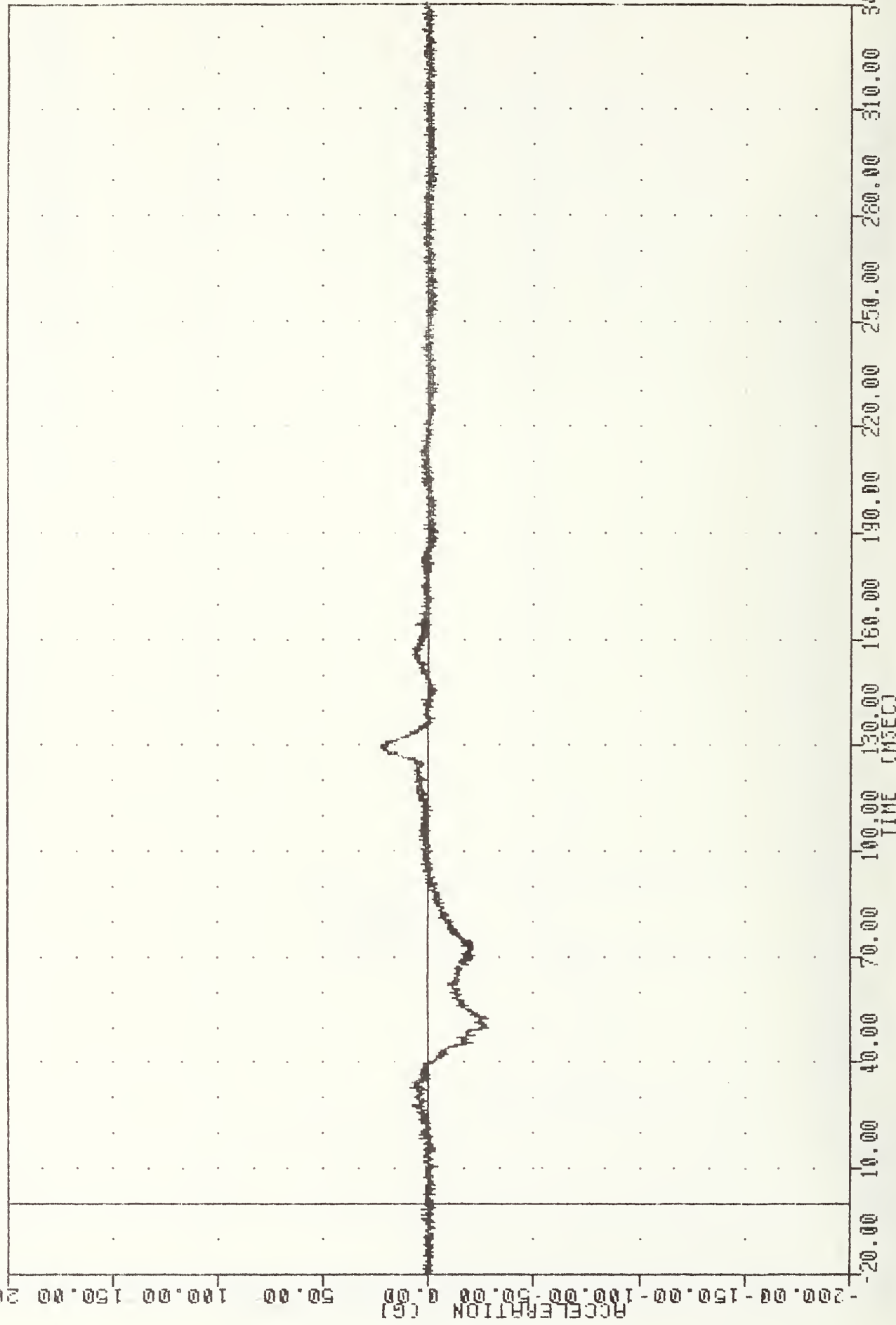
TRC . 830930
 EVALUATION . 1600
 83273000000
 PEVYV1
 PRINT DATE 4-01-84 13:40:10
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -0.02% -17.13% 37.22% 55.66



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING PEVYV1

TRC 830930
EVALUATION OF NDD VW FLEET
832730000000
HEDXG3

PLOT DATE 4-ULF 8 10:45:36
FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = -28.250 52.50 22.98 129.88



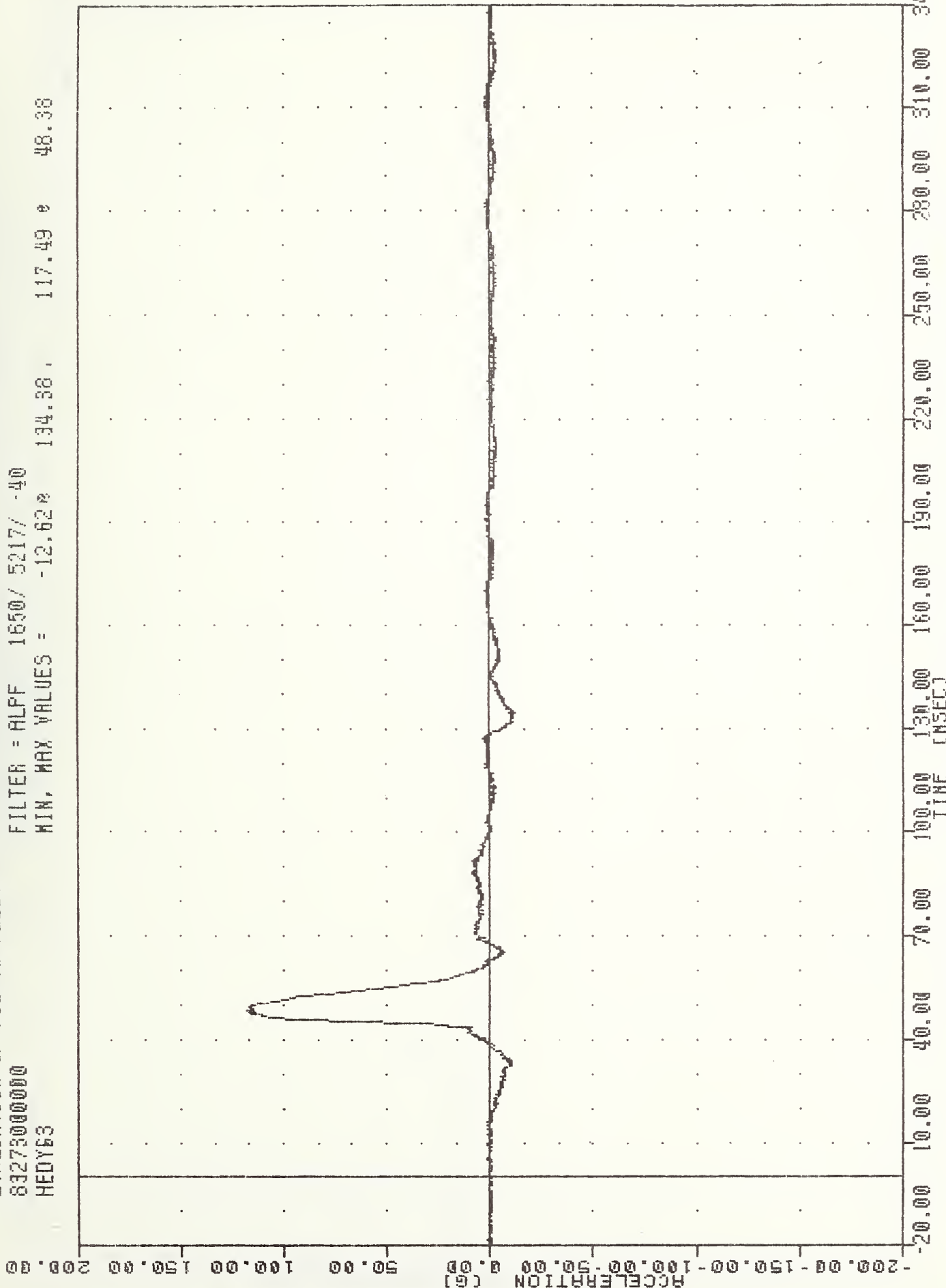
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION X AXIS

TRC 830930
 EVALUATION OF MOD VW FLEET
 83273000000
 HEDY63

PLN DATE 4- 10:45:36

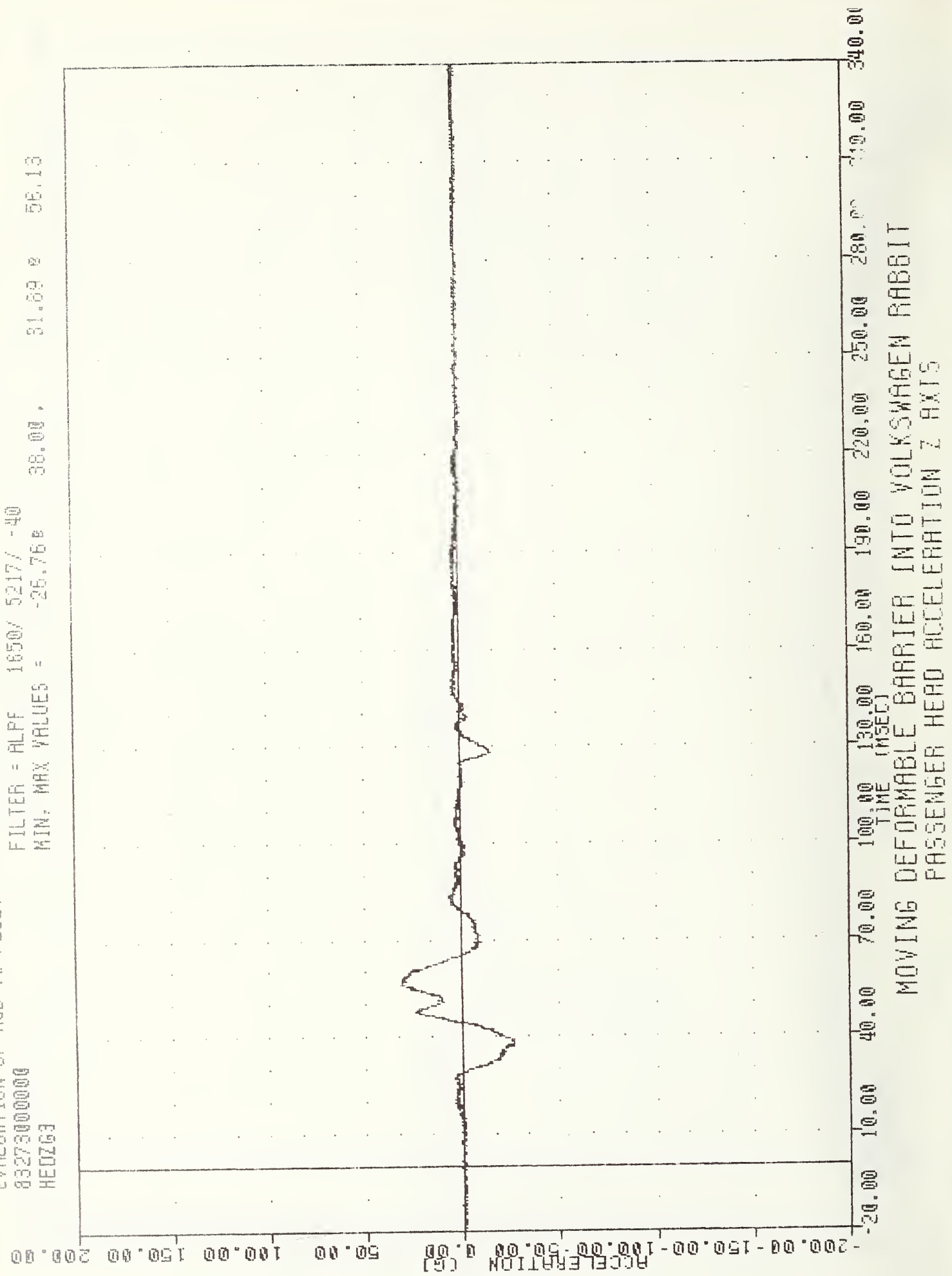
FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -12.628 134.38 , 117.49 e 48.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER HEAD ACCELERATION Y AXIS

TRC , 830930
 EVALUATION OF MDD YW FLEET
 832730000000
 HEDZG3
 PLOT DATE 4-OCT-83 10:40:36
 FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = -26.76 38.00 31.69 56.13



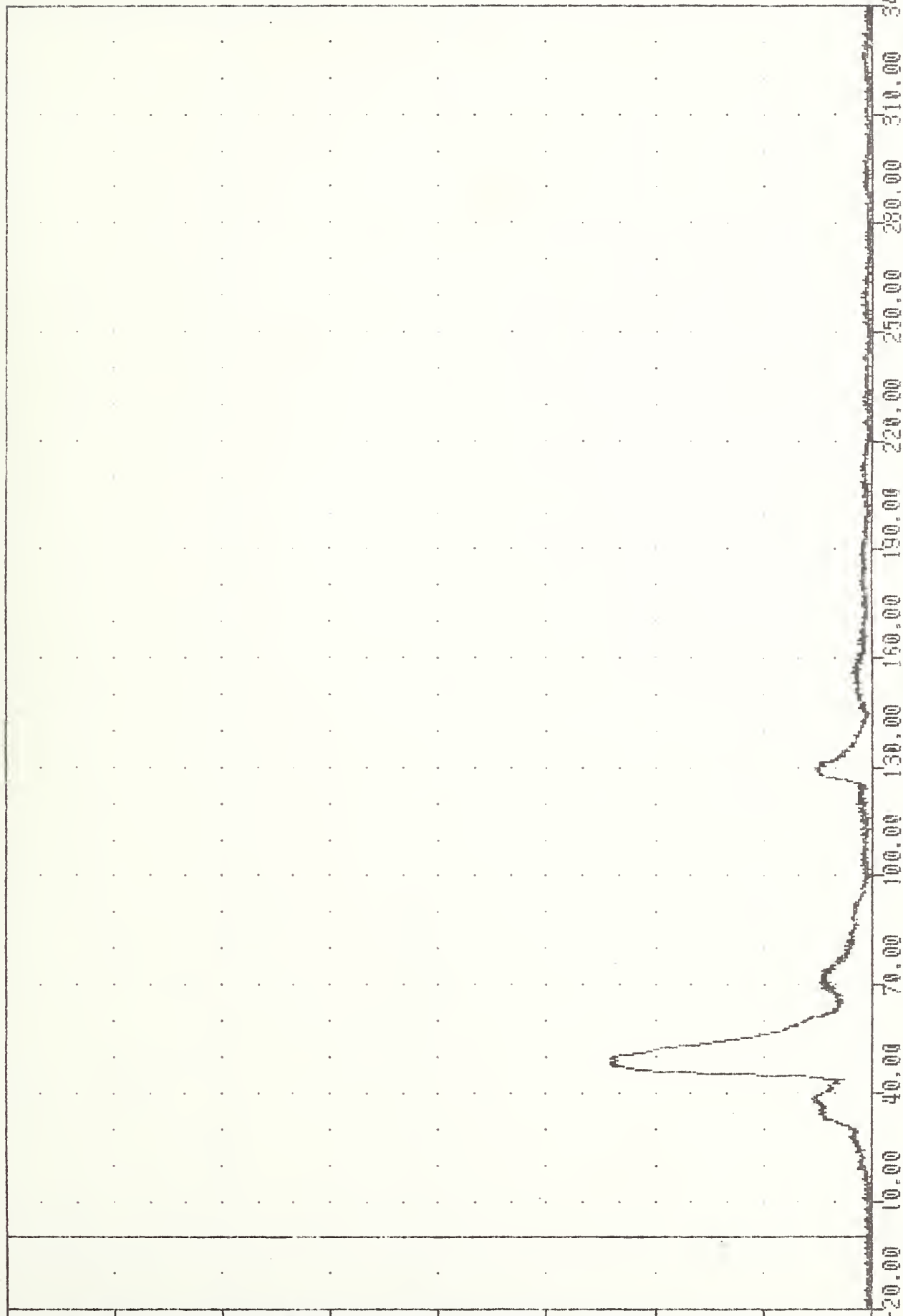
TAC 830930
 EVALUATION OF MOD VN FLEET
 83273000000
 HEAD63

PL01 DATE 4-ULI-83 10:40:36

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = 0.100 286.50, 120.79 * 48.38

ACCELERATION (G)

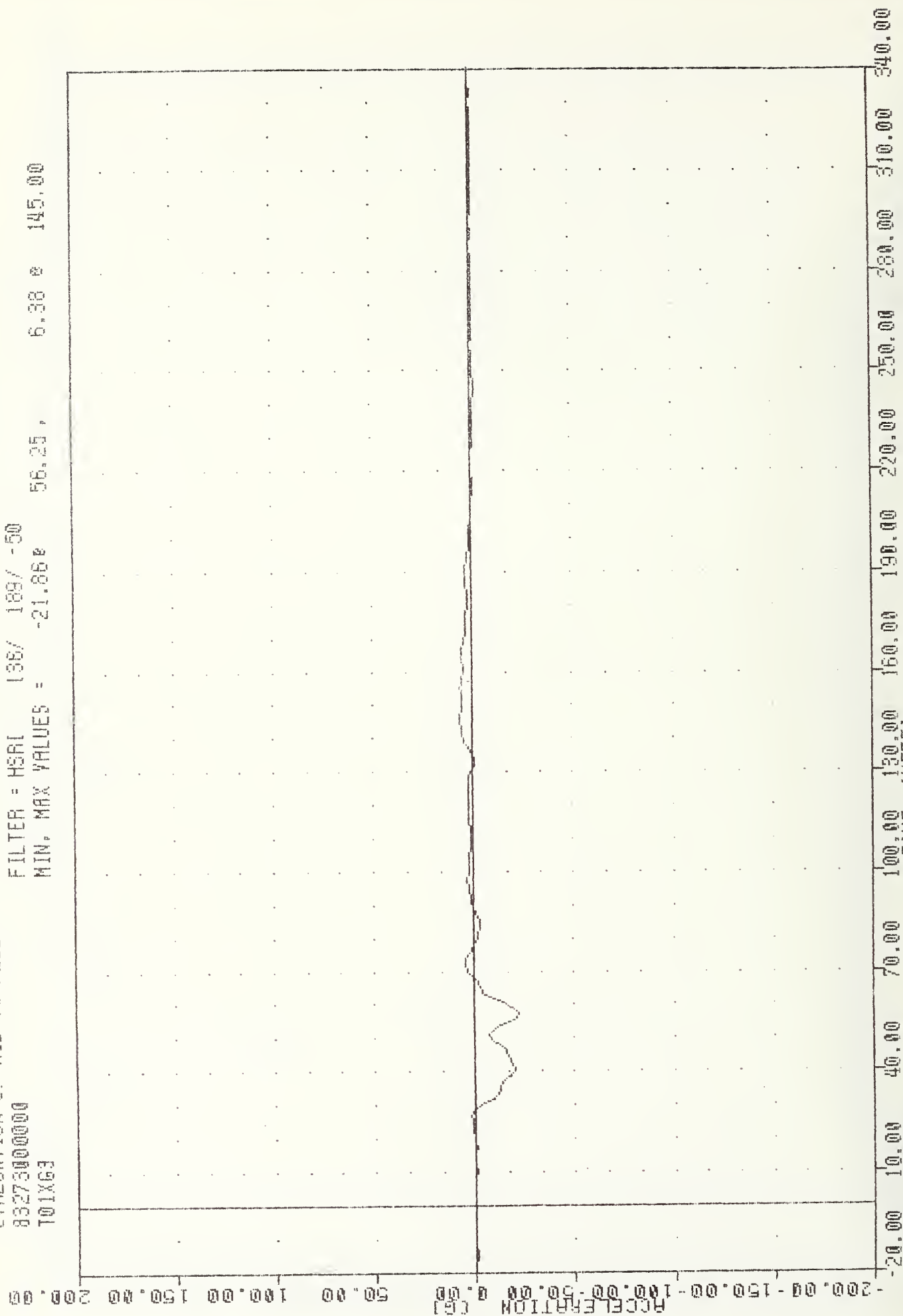


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER HEAD RESULTANT

TRC , 830930
EVALUATION OF MOD YW FLEET
83273000000
T01XG3

PL01 DATE 4-ULF-83 10:47:45

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -21.86e 56.25, 6.38 e 145.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE ACCELERATION X AXIS

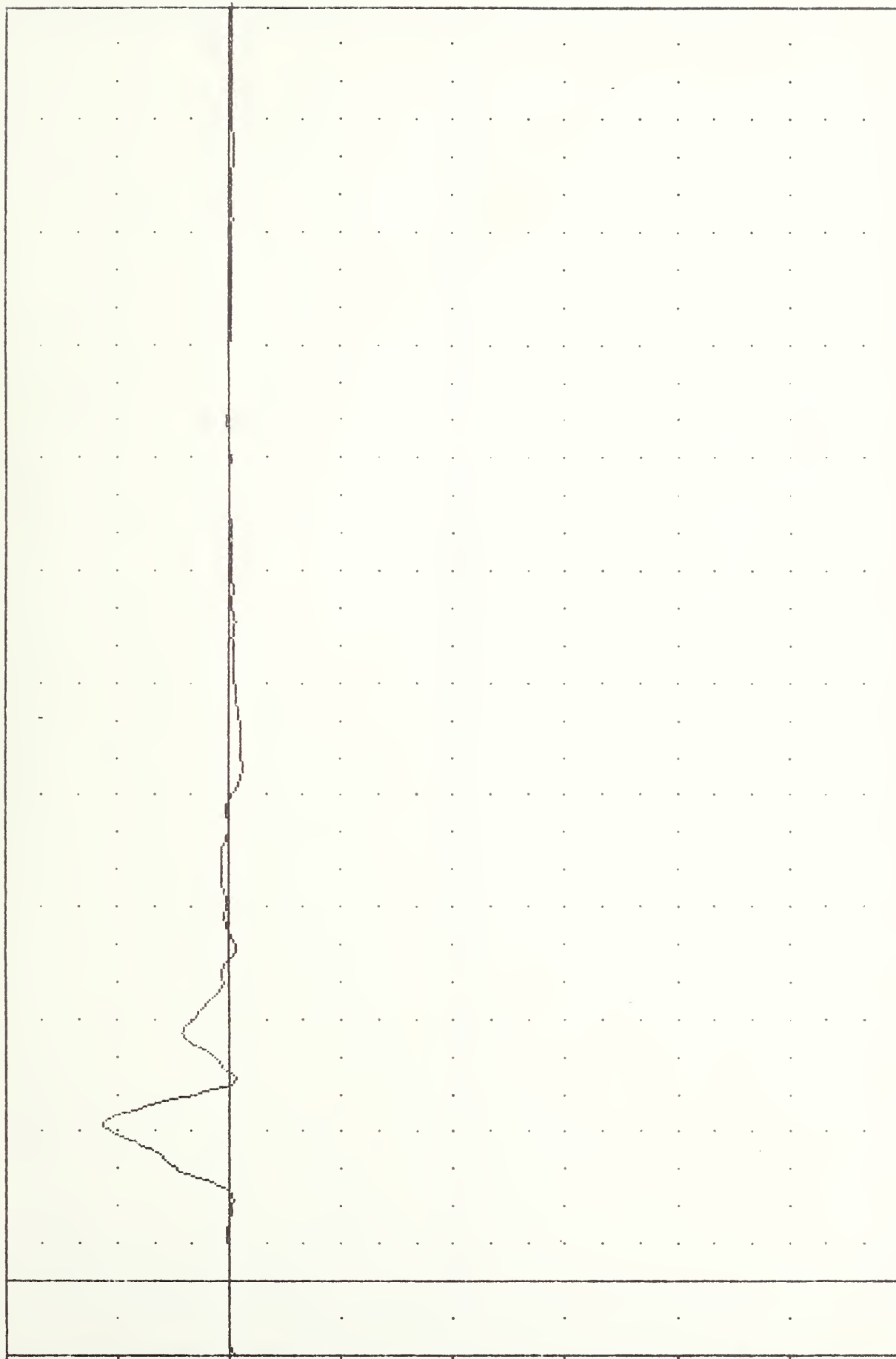
TRC 830930
EVALUATION OF MOD VW FLEET
83273000000
T01Y63

PLOT DATE 4-OCT-83 10:47:45

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -6.05e 136.88, 56.59 e 41.25

ACCELERATION [G]

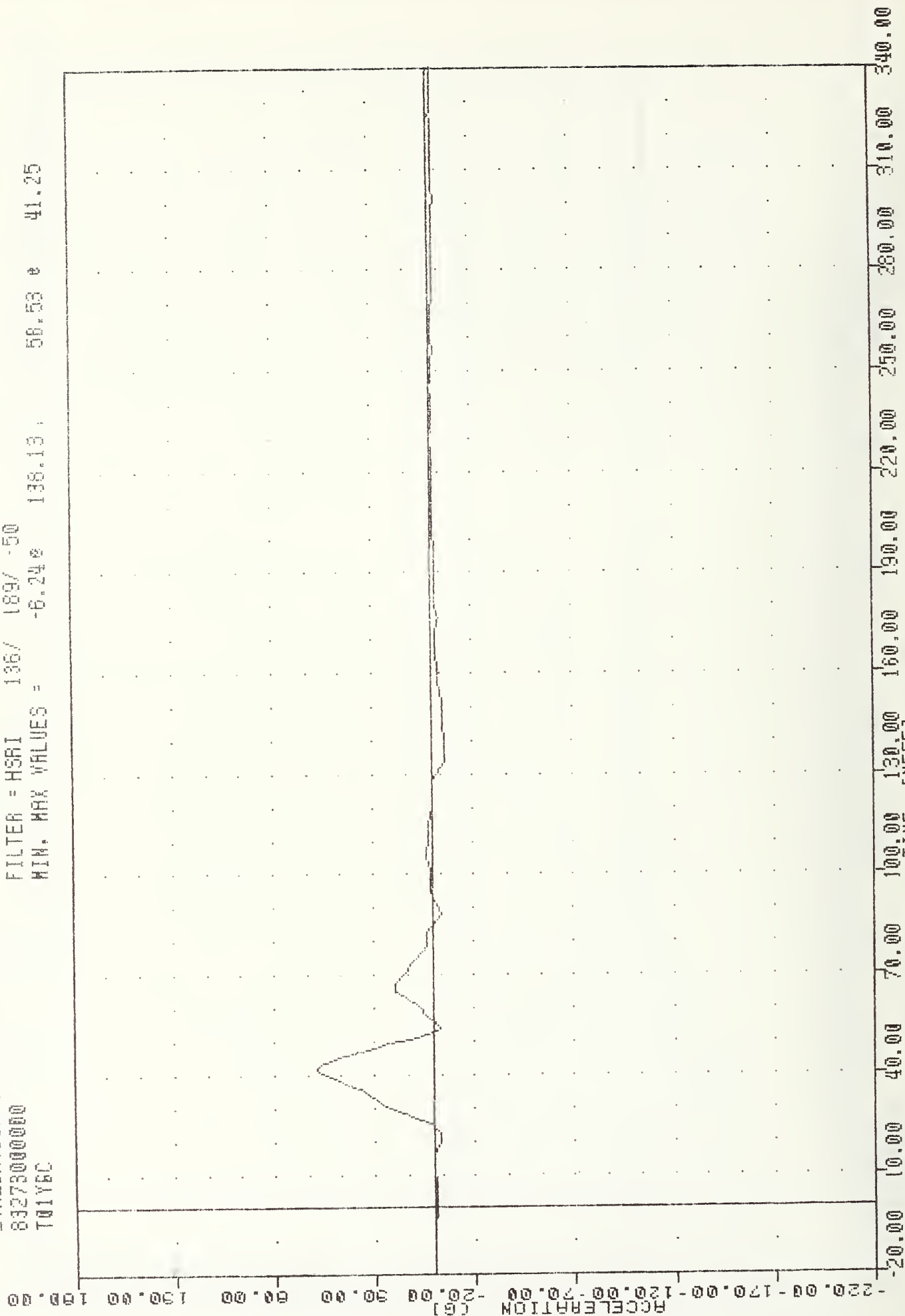


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE ACCELERATION Y AXIS

TAC , 830930
 EVALUATION OF MOD VW FLEET
 832730000000
 T01Y6C

PLOT DATE 4-OCT-88 10:47:10

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -6.24e 138.13, 58.53 e 41.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER UPPER SPINE ACCELERATION -2 Y AXIS

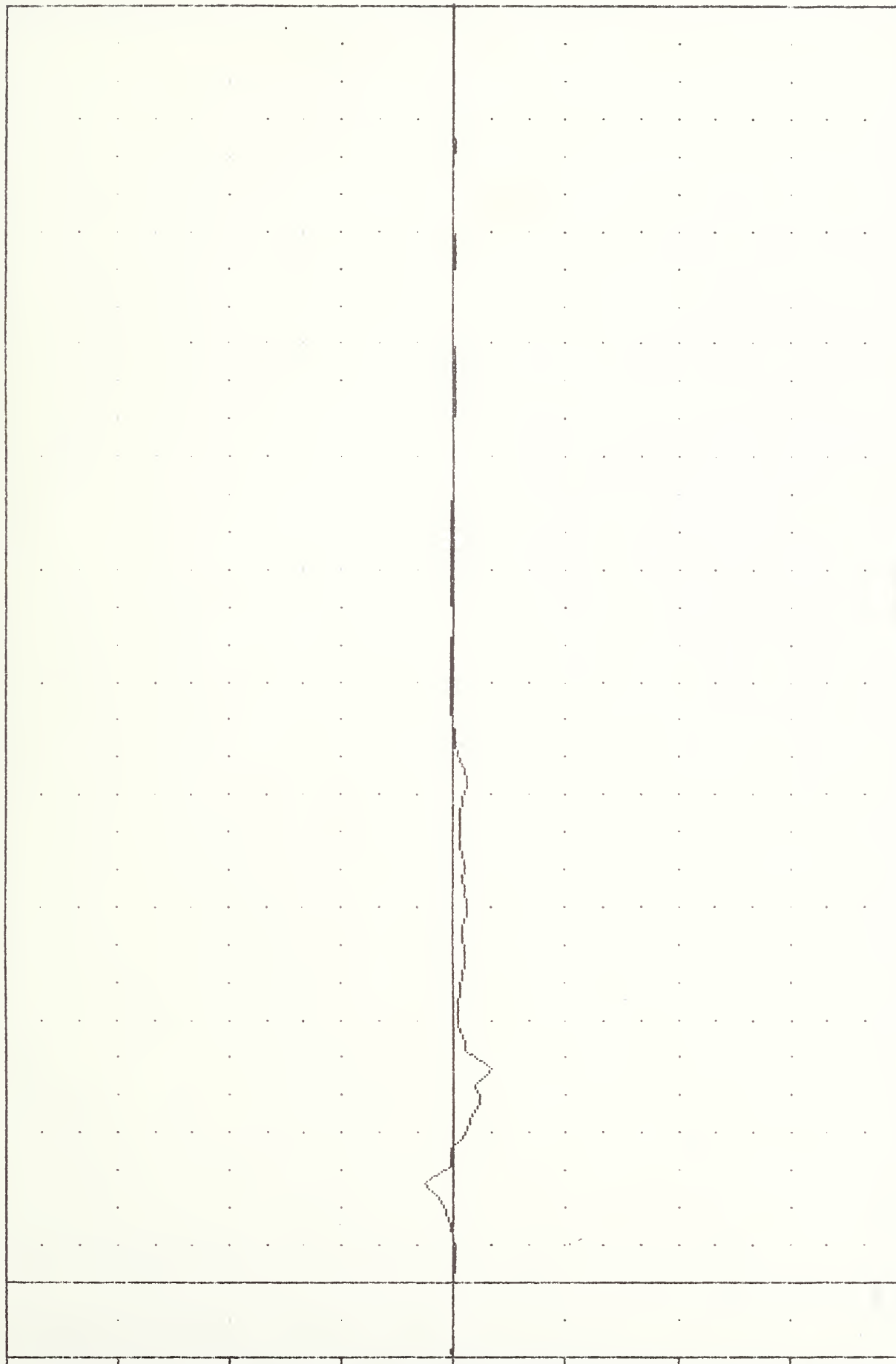
TRC 830930
 EVALUATION OF MOD VW FLEET
 832730000000
 T01763

PLU1 DATE 4-OCT-83 10:47:45

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -16.500 56.25 12.50 25.63

ACCELERATION (G)



-20.00

10.00

40.00

70.00

100.00

130.00

160.00

190.00

220.00

250.00

280.00

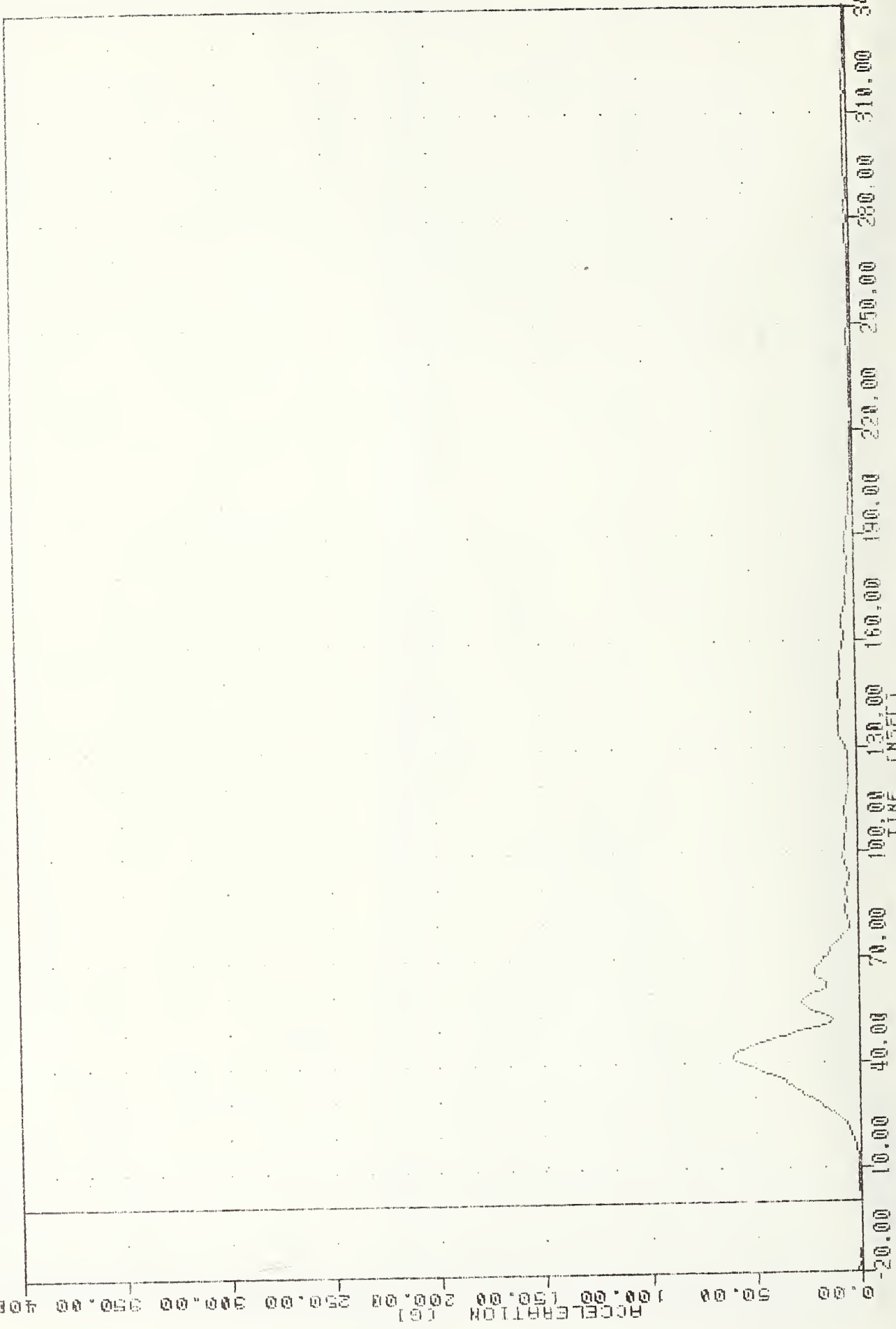
310.00

340.00

TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER UPPER SPINE ACCELERATION Z AXIS

TAC 830930
 EVALUATION OF HOD VW FLEET
 83273000000
 T01R63
 FILTER = H3R1 136/ 189/ -50
 MIN. MAX VALUES = 0.11e -7.50 60.12 41.25
 PLOT DATE 4-001-93 10:43:00

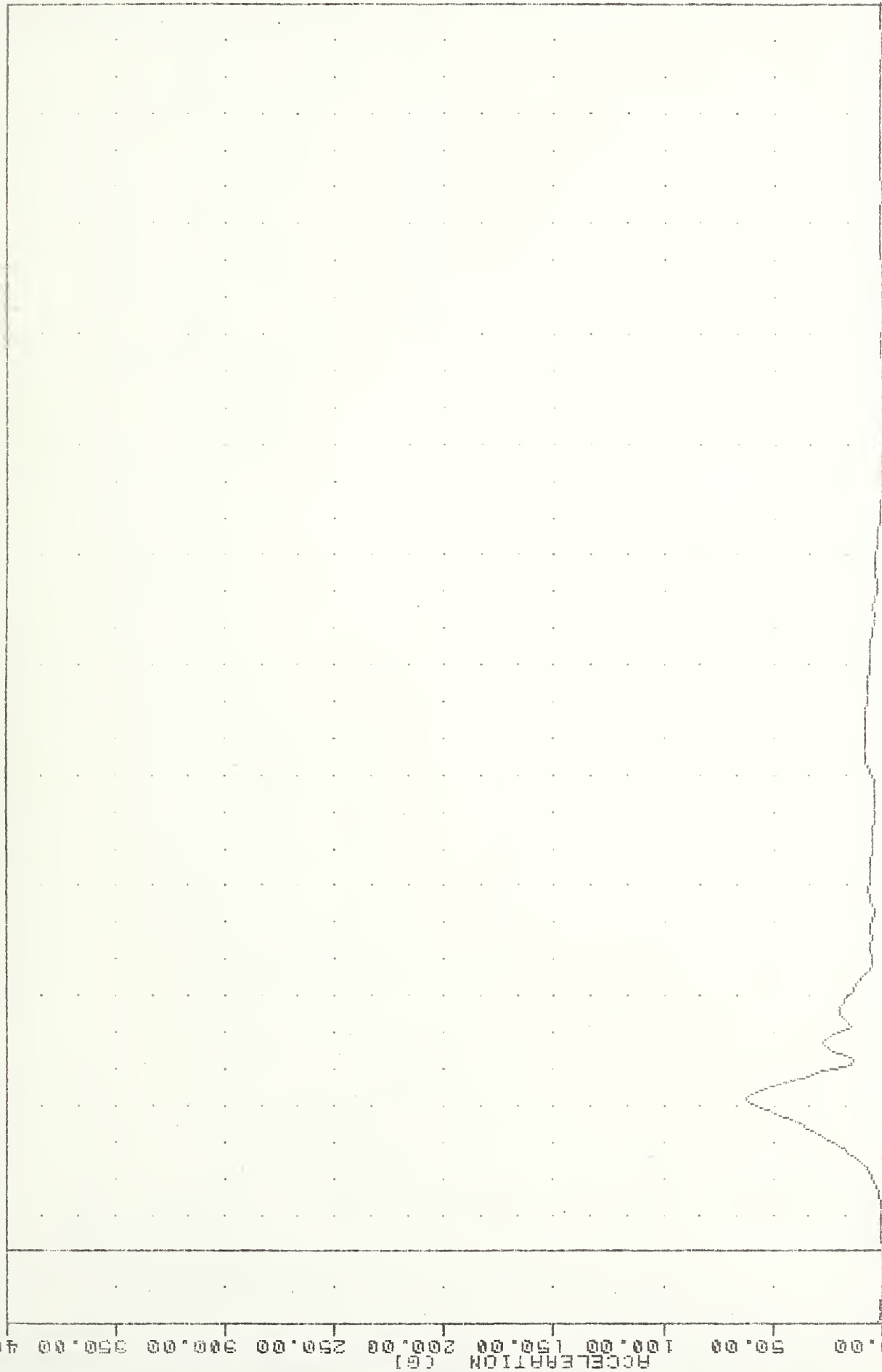


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER UPPER SPINE RESULTANT

2101 007P 10-03 10

700000
CALCULATION OF MOD VW FLEET
832730000000
T01R63

FILTER = HSRI 135/ 189/ -50
MIN. MAX VALUES = 0.10% -7.50 61.95 41.25

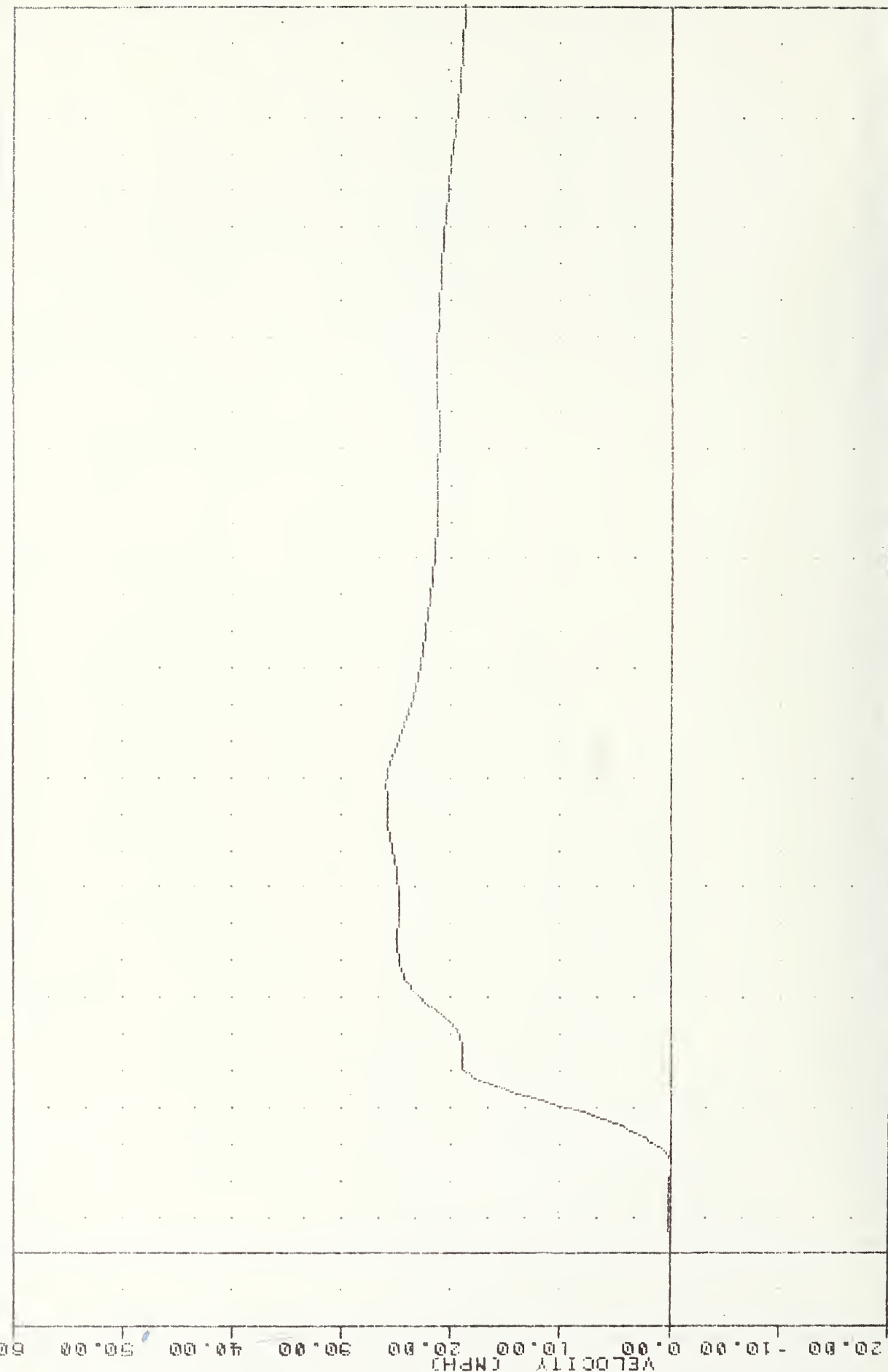


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE RESULTANT USING T01YGC

TRC
EVALUATION OF MOD VW FLEET
832730000000
T01YV3

PL01 DATE 4-JUL-89 13:59
FILTER = HSRI 136/ 189/ 50
MIN. MAX VALUES = -0.089 23.13

25.91 * 128.13



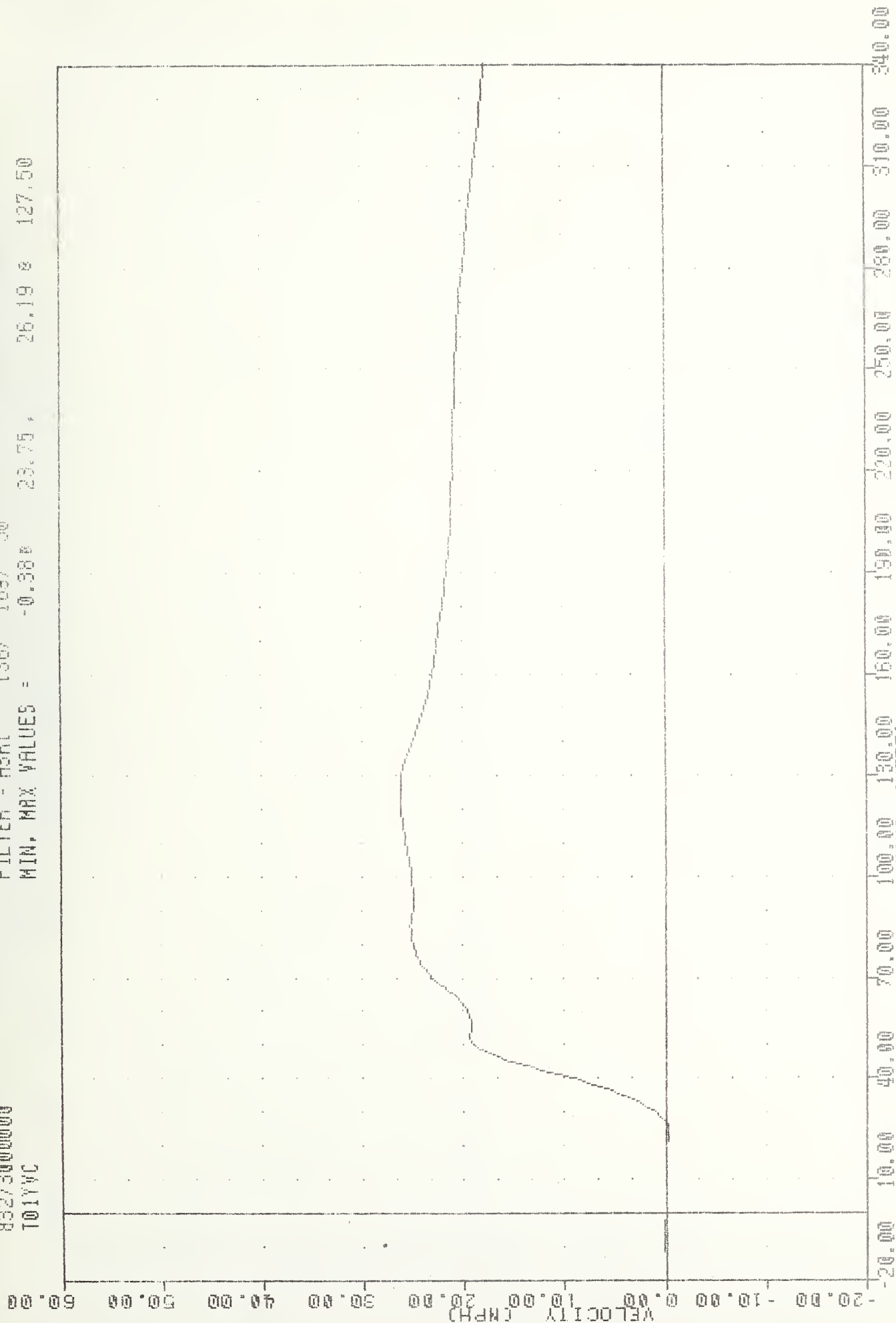
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01Y63

TRC 830000
EVALUATION OF MOD VW FLEE
832730000000
T01YVC

PLOT DATE 4-00

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.38 23.75 26.19 127.50

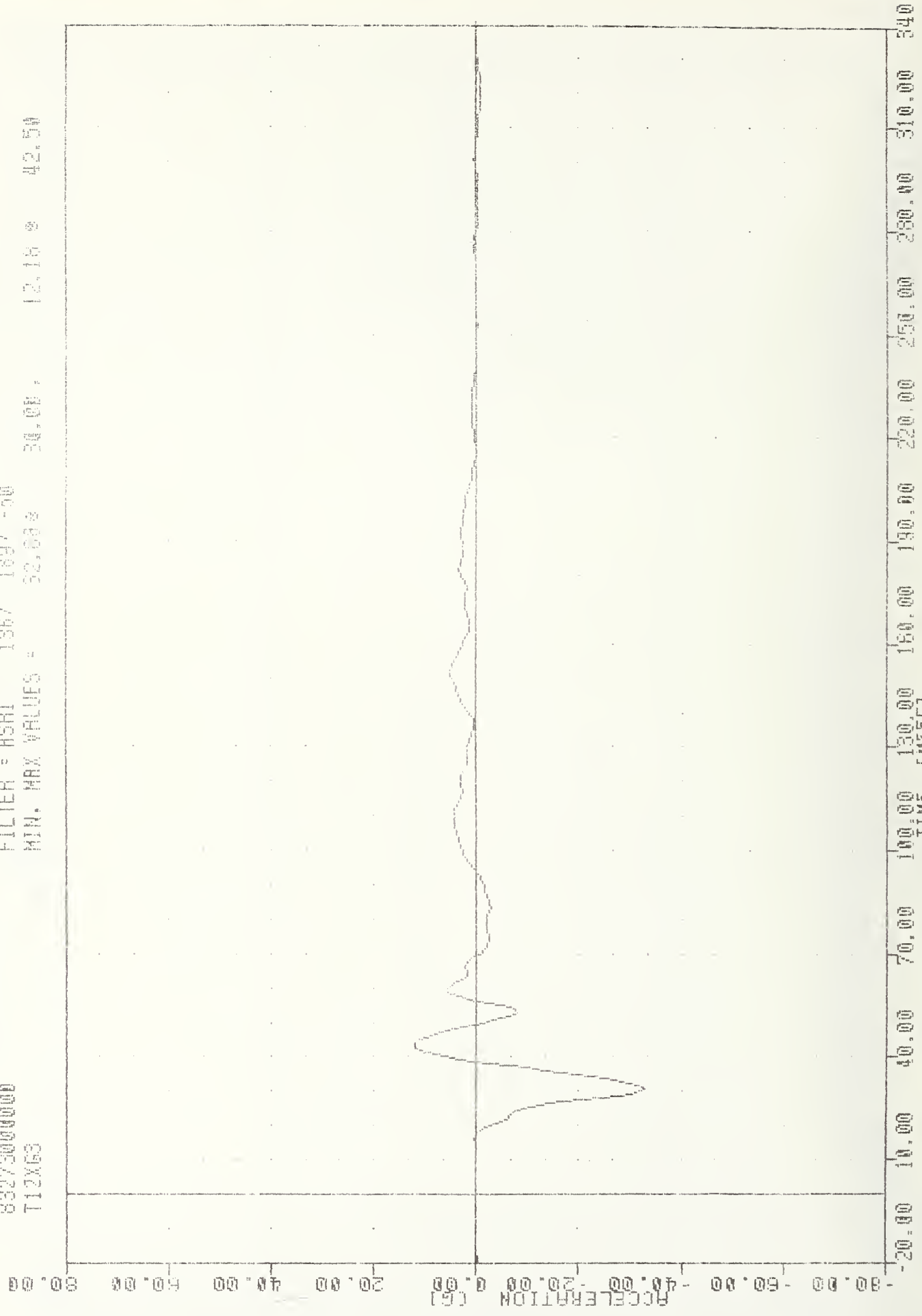


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YVC

TRC # 880930
 EVALUATION OF MBD VW FLEET
 83273000000
 T12XG3

PLOT DATE 4-06-80

FILTER = HSRI 1367 1637 -60
 MIN. MAX VALUES = 52.00% 34.00% 12.10% 42.50



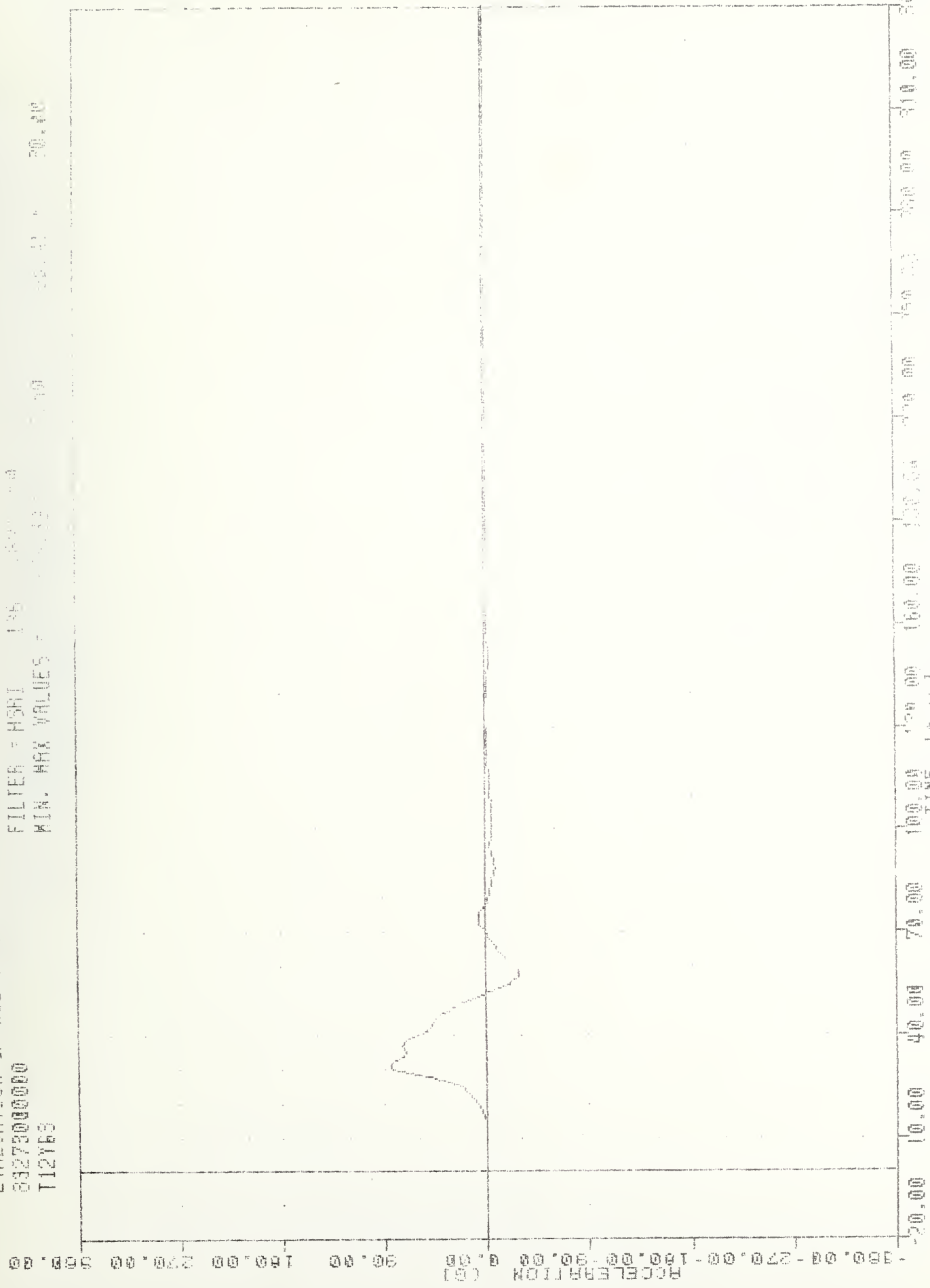
MOVING DEFORMABLE CARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LOWER SPINE ACCELERATION X AXIS

TRC
EVALUATION OF MOD VW FLEET
832730000000
T12YB3

PLQI DATE 4-JUL-83

FILTER = HSRI 1-6 100%
MIN. MAX VALUES 0.00 20.40

20.40



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN AUDIT
PASSENGER LATCH SPINE DECELERATION T-HIT

900

TRF

EVALUATION OF RUD VV FLIC

83273000000

T12Y6C

FILTER = H56Z

RIN, 443 VA

350.00

270.00

180.00

90.00

0.00

-90.00

-180.00

-270.00

-350.00

ACCELERATION (G)

TIME (SEC)

0.00

10.00

20.00

30.00

40.00

50.00

60.00

70.00

80.00

90.00

100.00

110.00

120.00

130.00

140.00

150.00

160.00

170.00

180.00

190.00

200.00

210.00

220.00

230.00

240.00

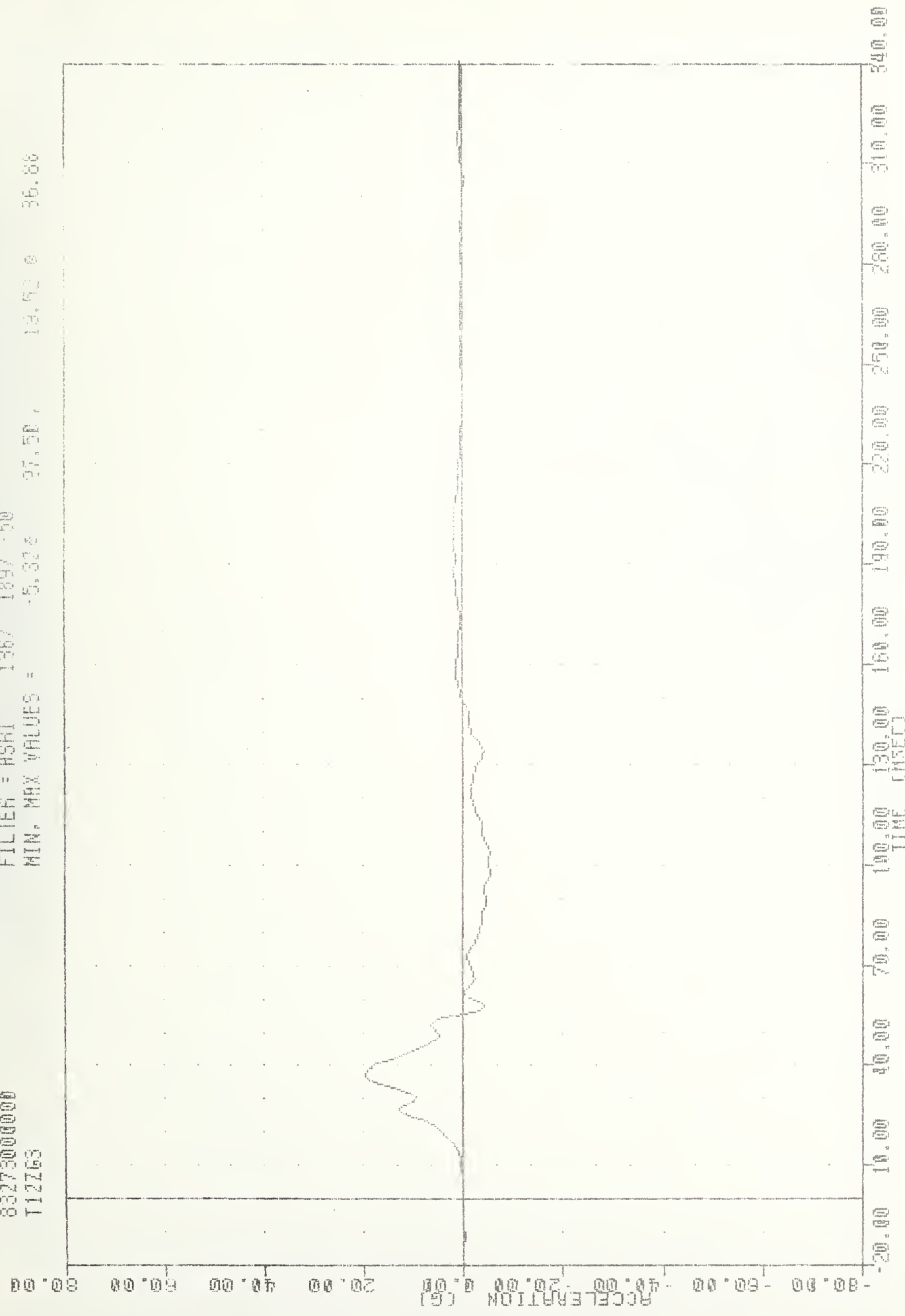
250.00

260.00

MOVING DEFERRABLE CAPACITY INTO VULNERABLE CITIES
PROSECUTOR UNDER SPY ACT

TRF 820430
 832730000000
 T12763

FILTER = HSRI 1367 1897 50
 MIN, MAX VALUES = -5.326 27.50 13.52 36.86



MOVING DEFORMABLE BARRIL INIU VOLKSWAGEN RHHB17
 PASSENGER LOWER SPINE ACCELERATION Z AXIS

T12
 832730000000
 EVALUATION OF MOD YW FLEET
 T12R63

FILTER = HSRI 1367 1897 50
 MIN. MAX VALUES = 0.05% -15.00% 30.00%



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN PASSAT
 PASSENGER LOWER SPINE REGION (MM)

TRC 830930 , 4-DEC-83 10.40.47

FLUT DATE

830930 , 4-DEC-83 10.40.47

OF MOD YW FLEET

FILTER = HSR 136/ 189/ -50

MIN, MAX VALUES = 0.10e -15.87, 92.82 e 30.62

83273000000

T12RG3

ACCELERATION (G)

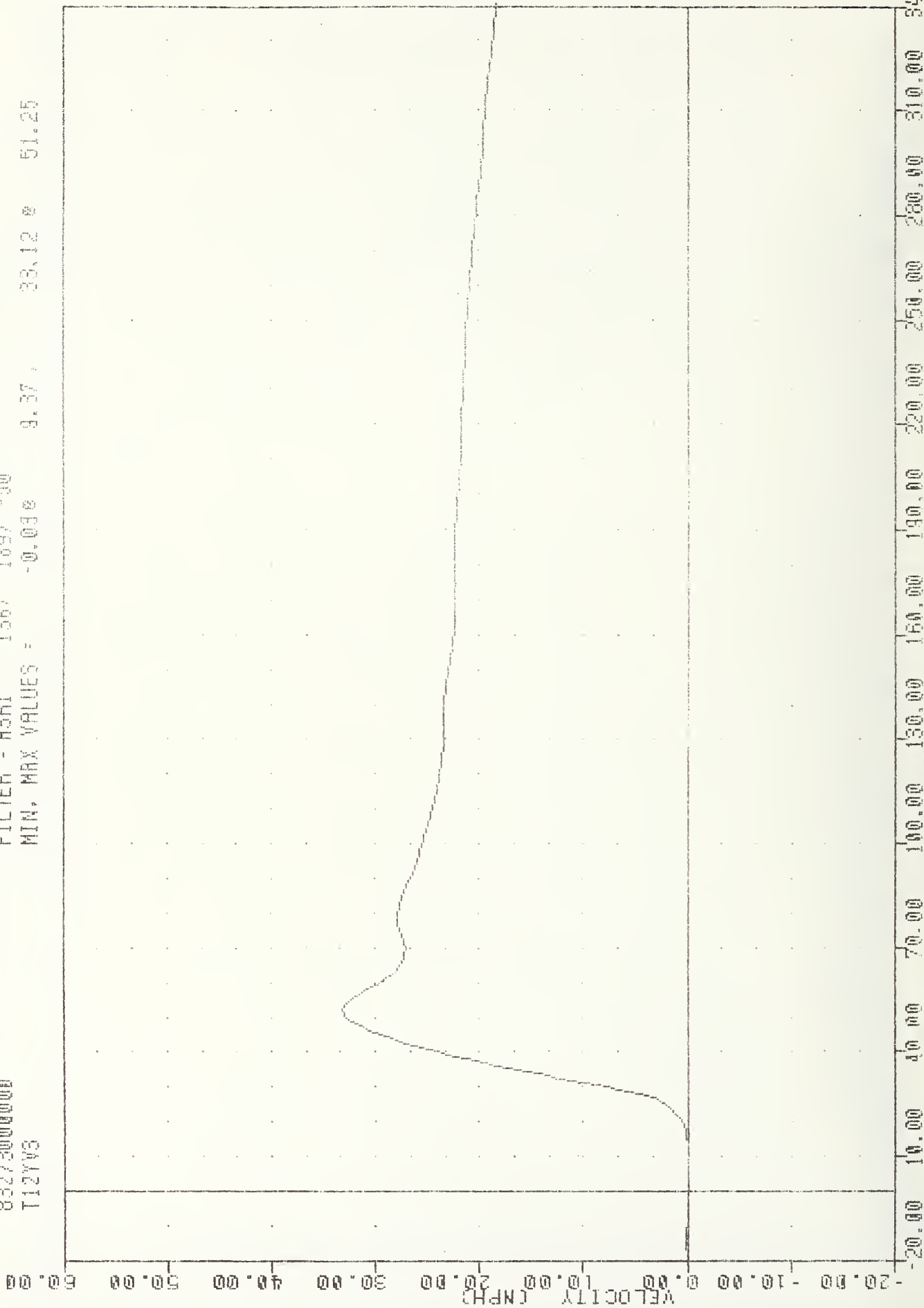
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE RESULTANT USING T12YGC

TAC 830930
 EVALUATION OF MDD VW FLEET
 832730000000
 T12YV3

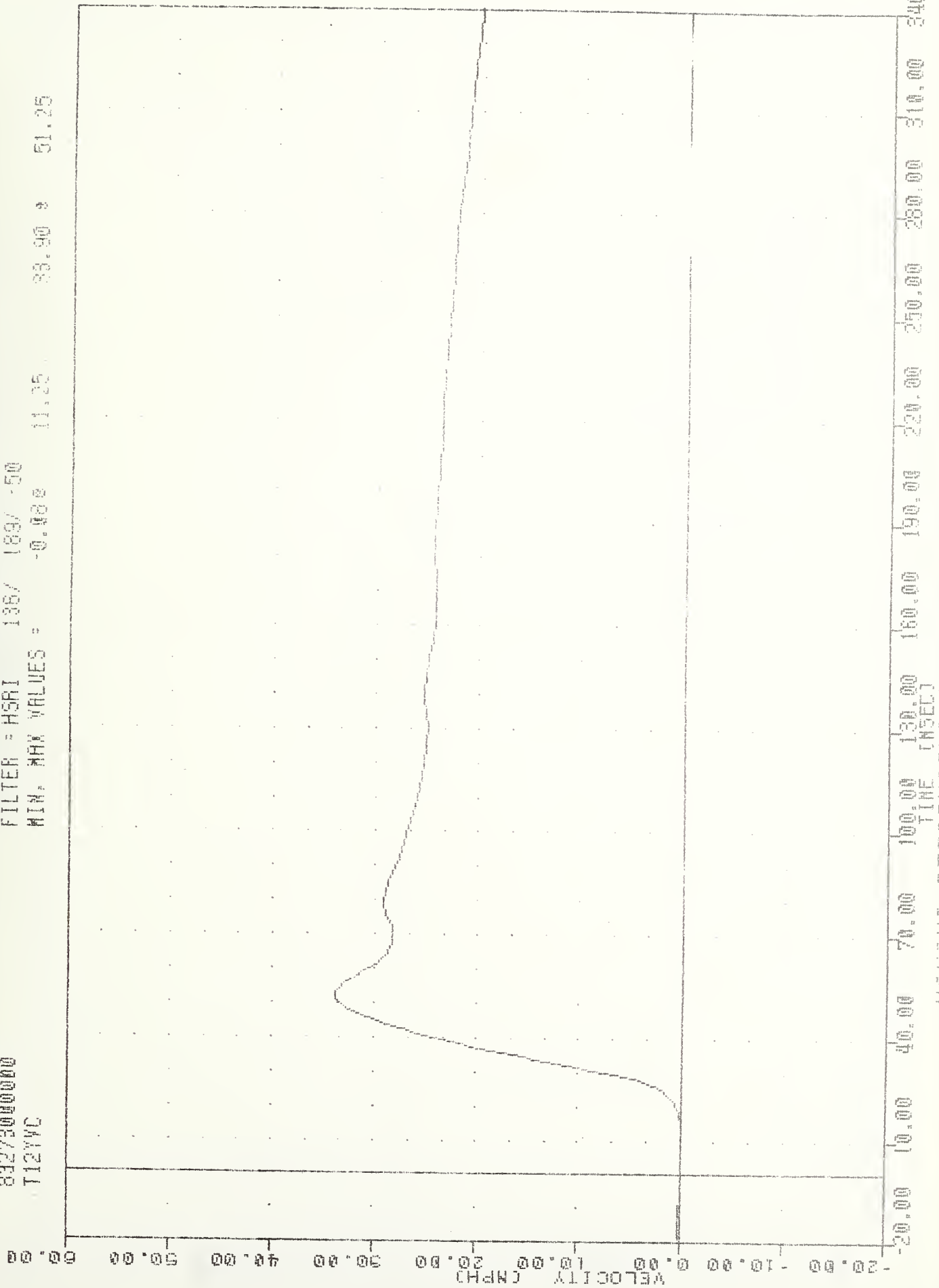
PLDT URTS 4-001-83 1/139/87

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.038 9.37, 33.12 51.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T12YV3

TAC , 830000
 EVALUATION OF HUG VW FLEET
 832730000000
 T12YVC
 PLOT DATE 4-001-82 11:49:37
 FILTER = HSRI 138/ 189/ -50
 MIN. MAX VALUES = -0.00e 11.25 33.90 51.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V HIC1000 T12YVC

TAC - 830930

EVALUATION OF MOD VV FLEET

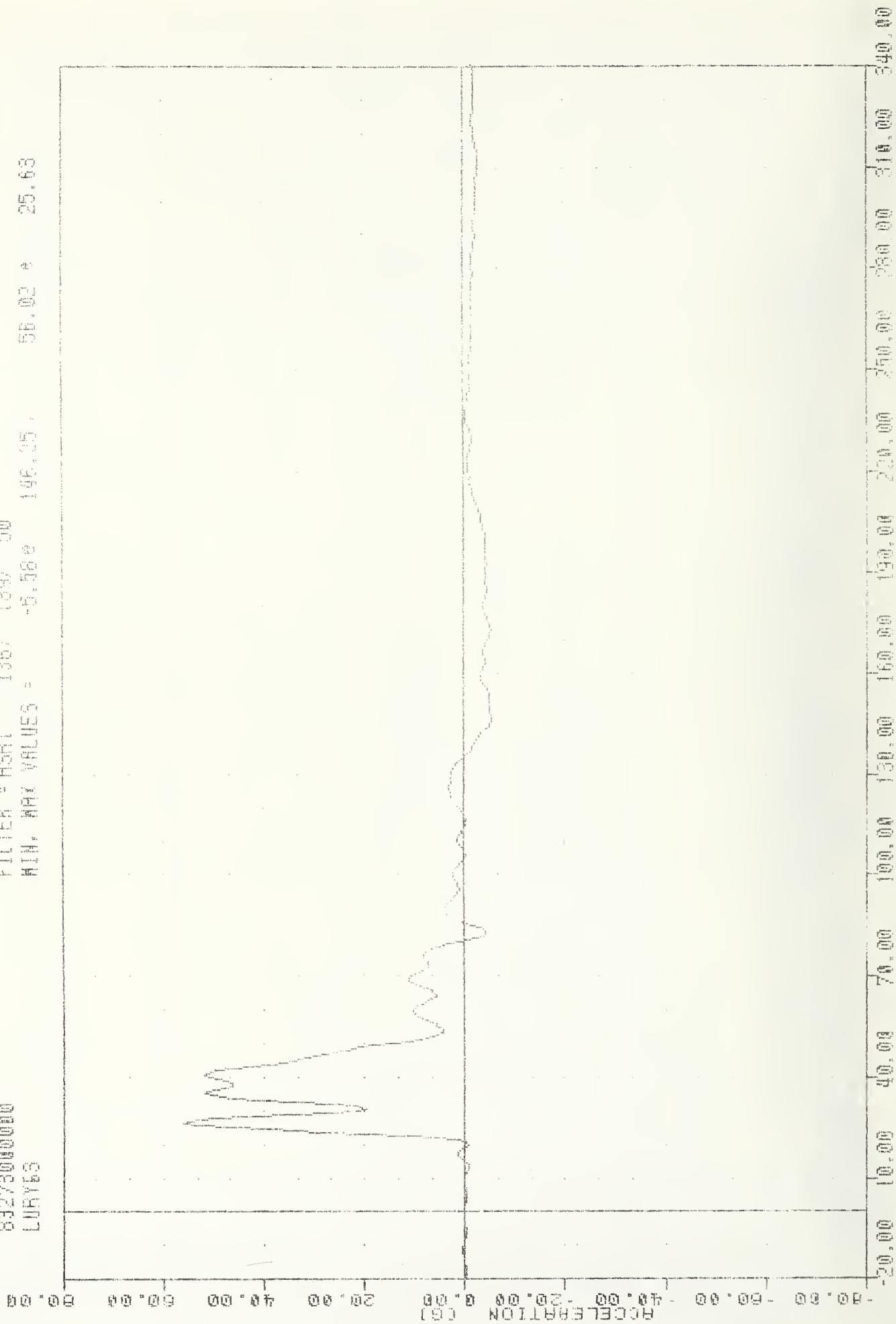
83273000000

LURY63

PLOT DATE 4-JUL-81 10:47:47

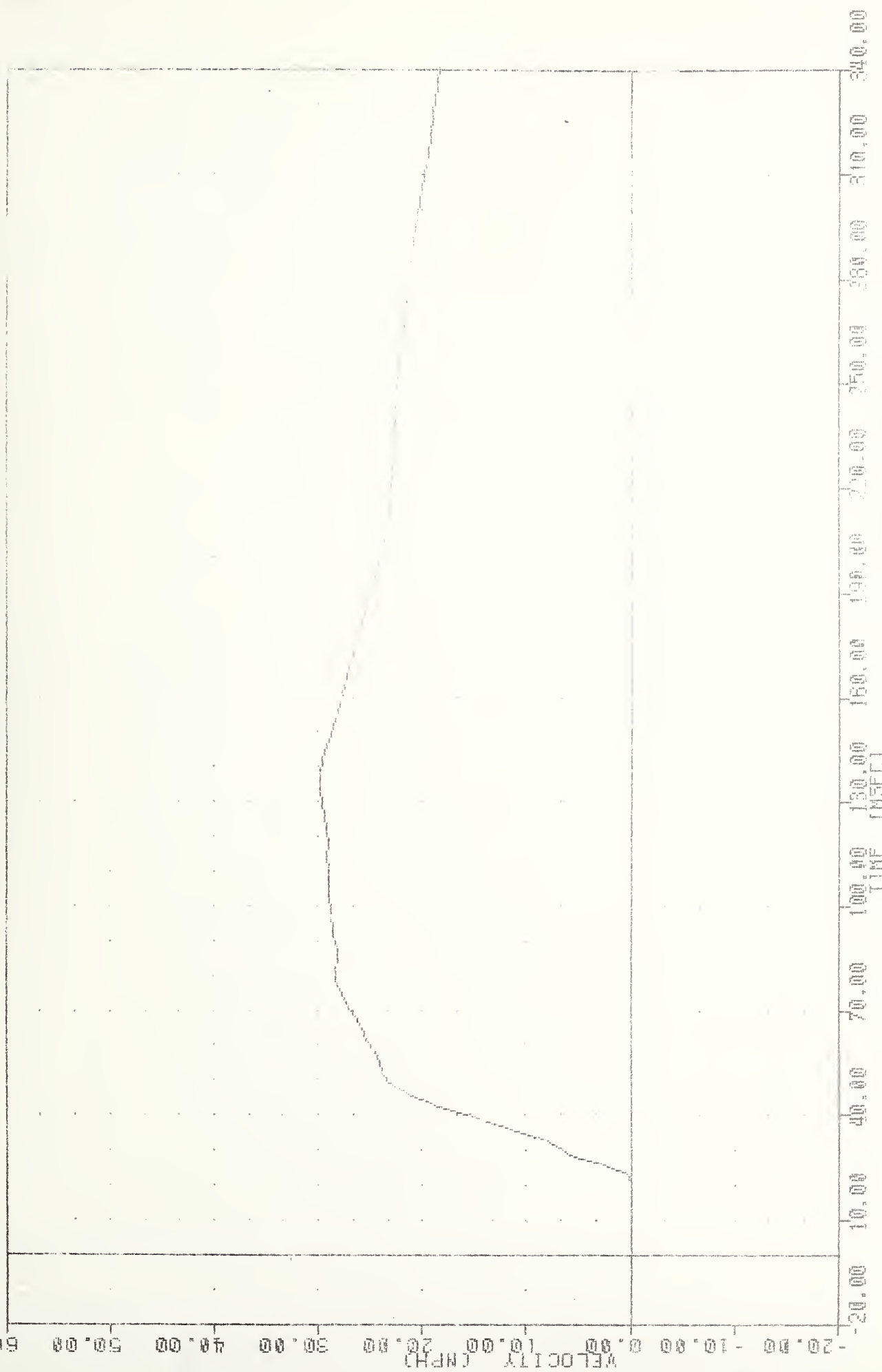
FILTER = HSRI 136/ 189/ 50

MIN. MAX VALUES = -5.58 146.05 56.02 25.63



MOVING-DEFORMABLE BARREL INTO VERTICAL POSITION
PROCESSOR LEFT UPPER AND RIGHT UPPER

83000200
 EVALUATION OF MOD W FLEET
 032730000000
 LURYV3
 FILTER = HSRI 136/ 199/ 50
 MIN. MAX VALUES = -0.05e 14.97 22.63 135.00
 14.97 22.63 135.00



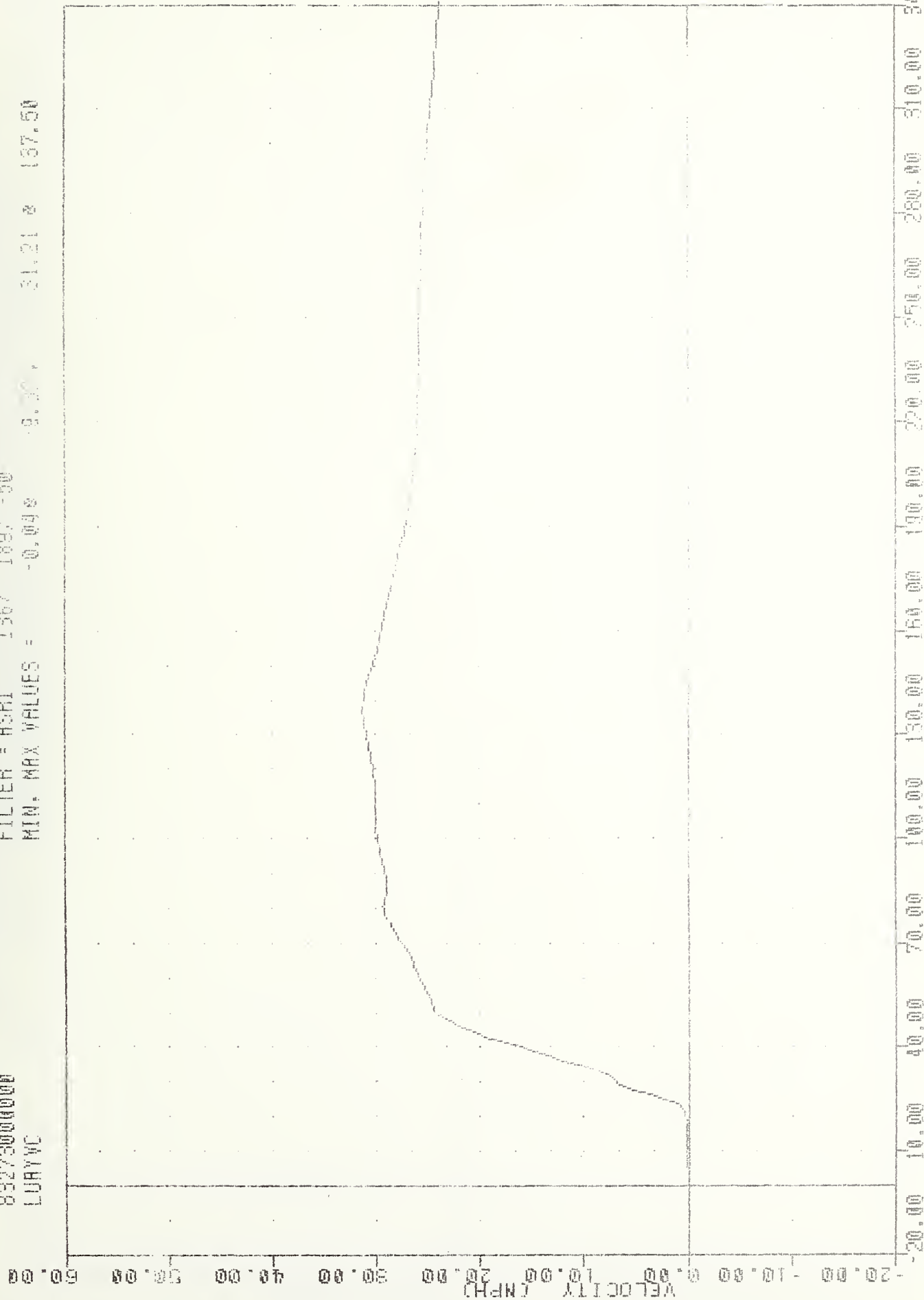
MOVING DEFORMABLE BARRIER INTO VEHICLE WHEN RABBIT
 DELTA W/USING LURIES

TRC 830930
 EVALUATION OF MOD VW FLEET
 832730000000
 LURYVC

PLOT DATE 4-18-77

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.048 9.30 21.21 137.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LURVE

TRC
EVALUATION OF MDG VW FLEET
03270000000
LLRY63

FILE DATE

FILIER = HSRI

MIN. MAX VALUES

0.00 0.00 0.00

ACCELERATION (G)



TIME (min)

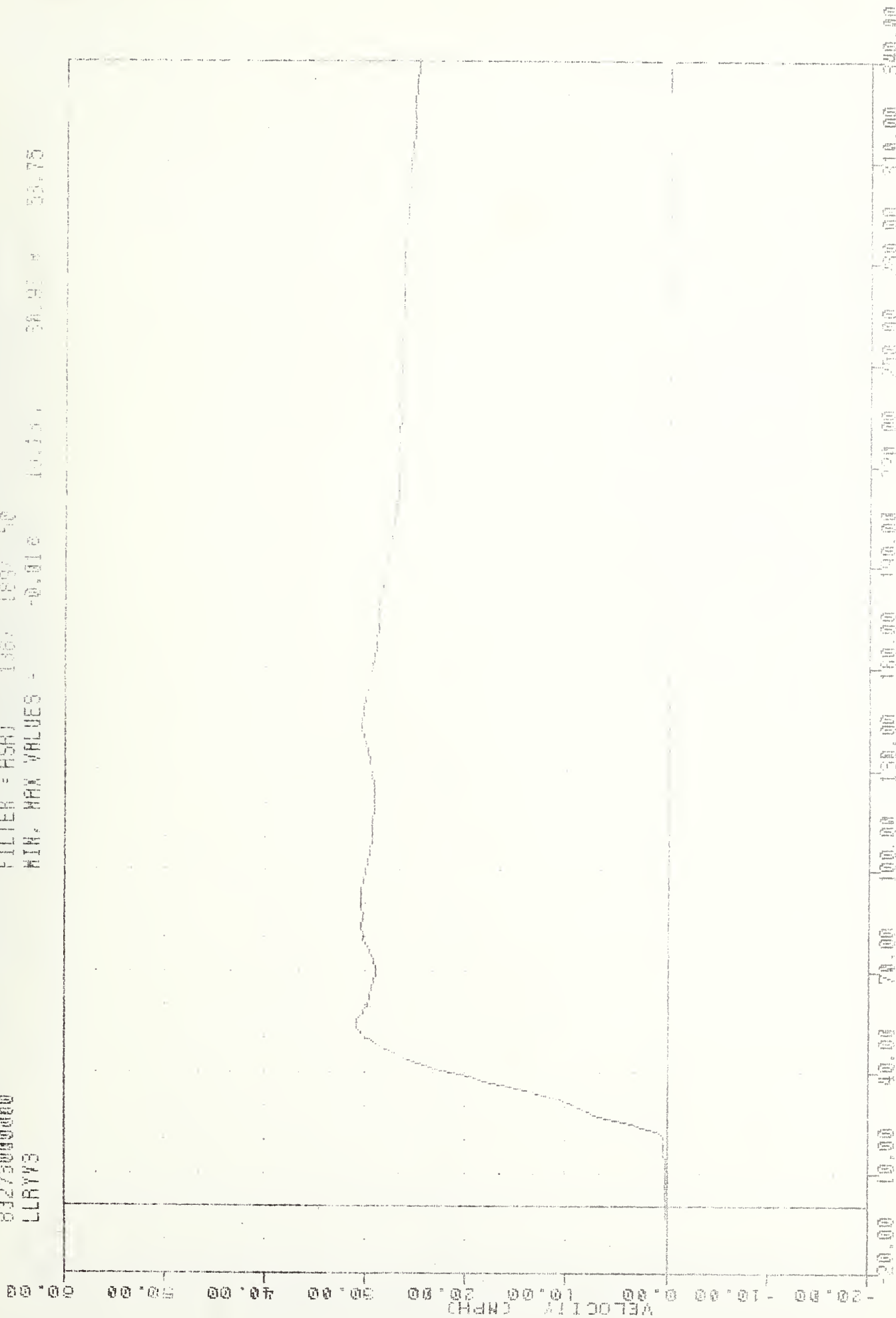
MOVING DEFORMABLE BARRIER INTO VHS 38000000000

PASSENGER LEFT LOOPS FOR PROTECTION 7 400

TAC
 EVALUATION OF MOD VW FLEET
 83273000000
 LLRYW3

PRINT DATE 4-OCT-83 18:09:30

FILTER = HSRJ 136, 189, 10
 MIN, MAX VALUES - 0.012 10.13, 30.82, 53.75



MOVING DEFORMABLE APPROXIMATE INITIAL VELOCITY (MPH)
 0.00 10.13 30.82 53.75

TBC
 EVALUATION OF ACC AND VN FL221
 83273000000
 LLYBDC

FL01 DATE

FILTER = HSRI

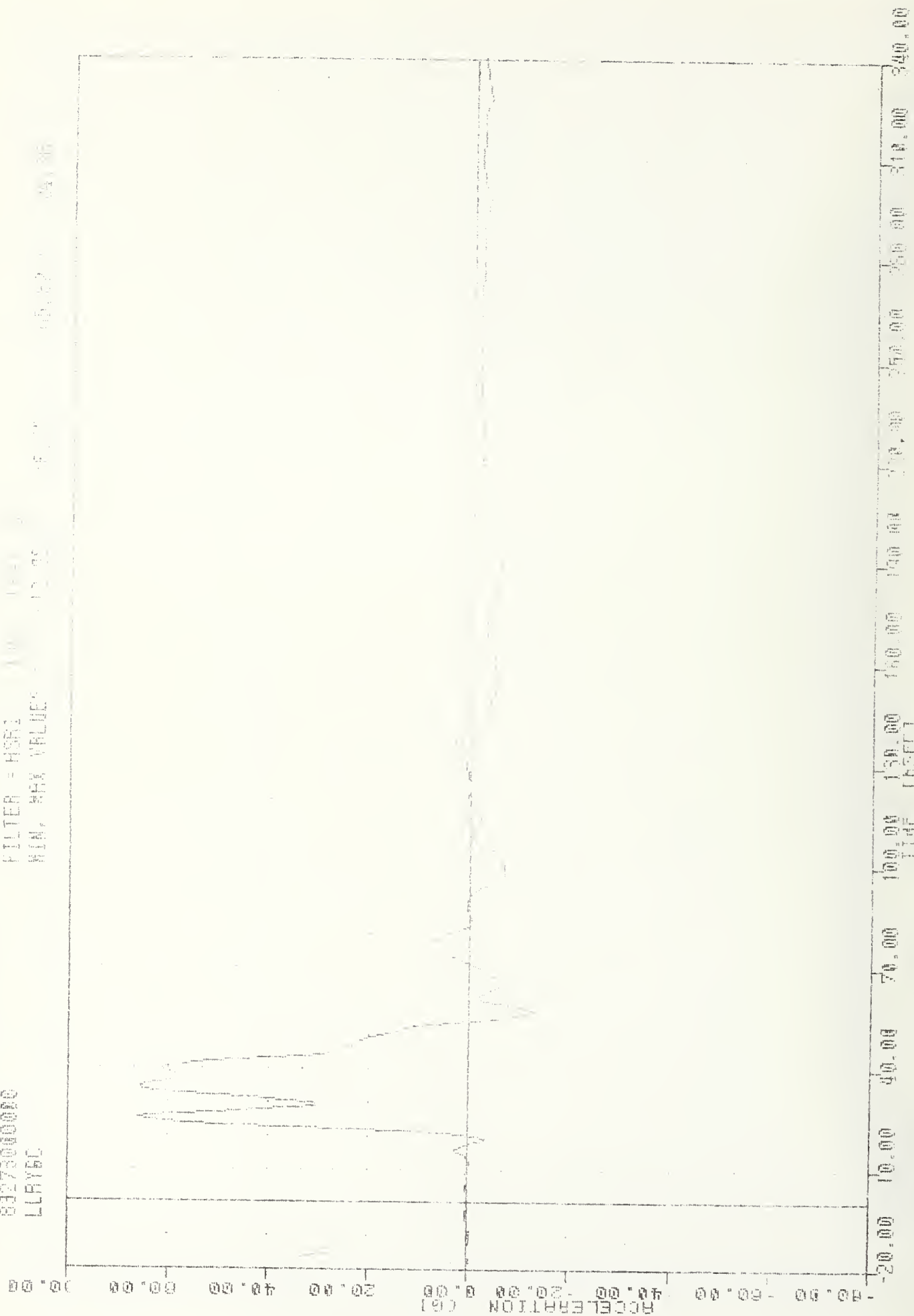
MIN, MAX VALUES

12.33

8.77

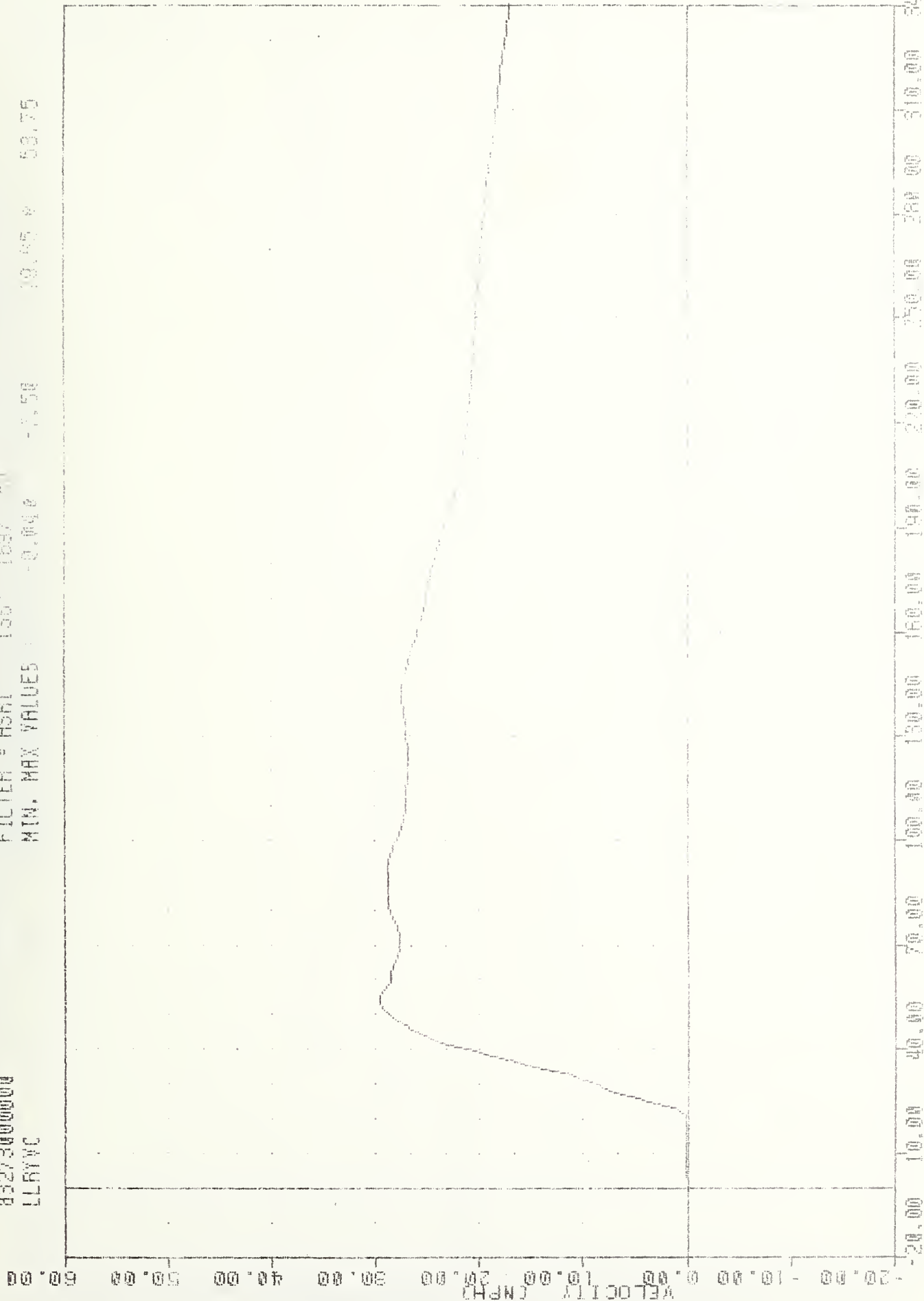
05.82

04.86



MOVING DEFORMATION BARREL INTO VIBRATION MOUNT
 PASSENGER LEFT LOWER DECK (100.00 SEC)

TRC 832730000000
 EVALUATION OF NUD YW FILE
 FILTER = HSRI 135 189 50
 MIN. MAX VALUES -0.048 -1.58 10.45 53.75
 PLOT DATE 4-JUL-63 18:44:00

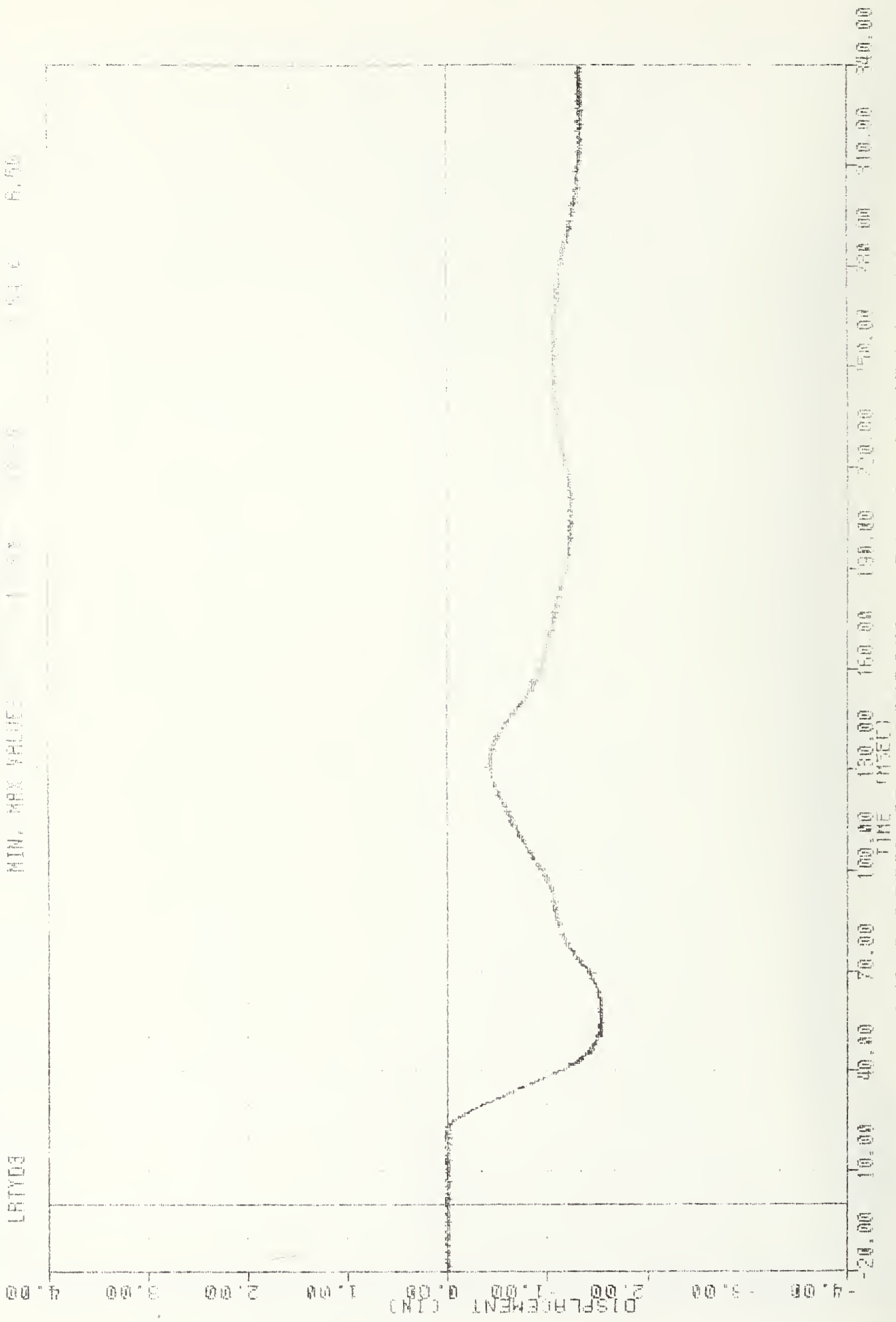


MOVING DEFORMATIC BARrier INTO VULCANIZING UNIT

REF ID: A6144-11106

TP
 EVALUATION OF THE PW FLEET
 03275000000
 LATYD3

PLOT DATE 000000
 FILTER: ALFF 1000 0000
 MIN, MAX VALUE 0.00 6.50



MOVING DEFORMABLE BARrier INTO YOLK WITH FLEET
 PROCEEDING AT 810 IN 0000 0000 0000

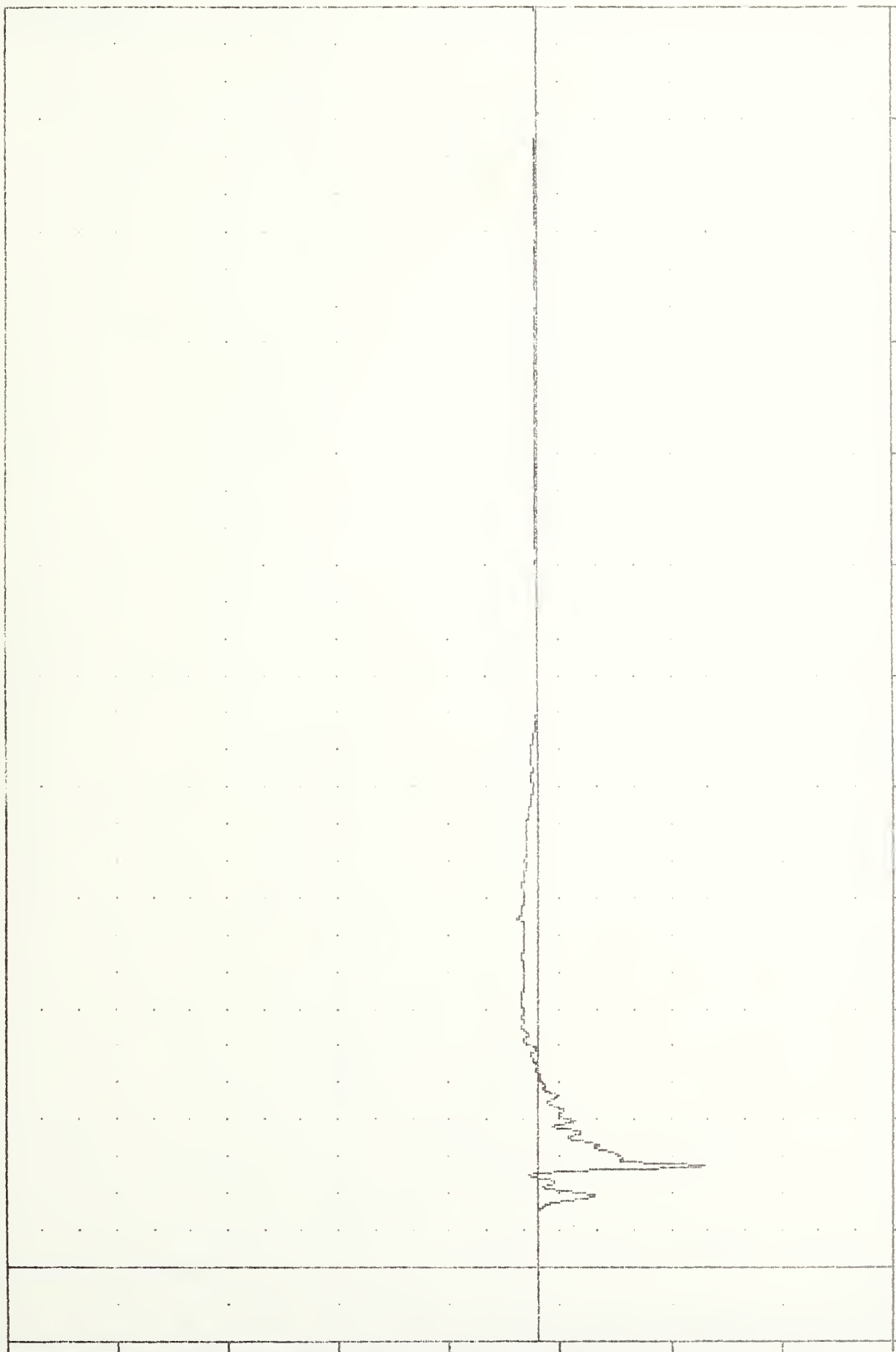
TRC 830930
 EVALUATION OF MOD VW FLEET
 832730000000
 PEVXG3

PLOT DATE 4-OCT-81 12:49:38

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -75.188 27.13 9.03 94.25

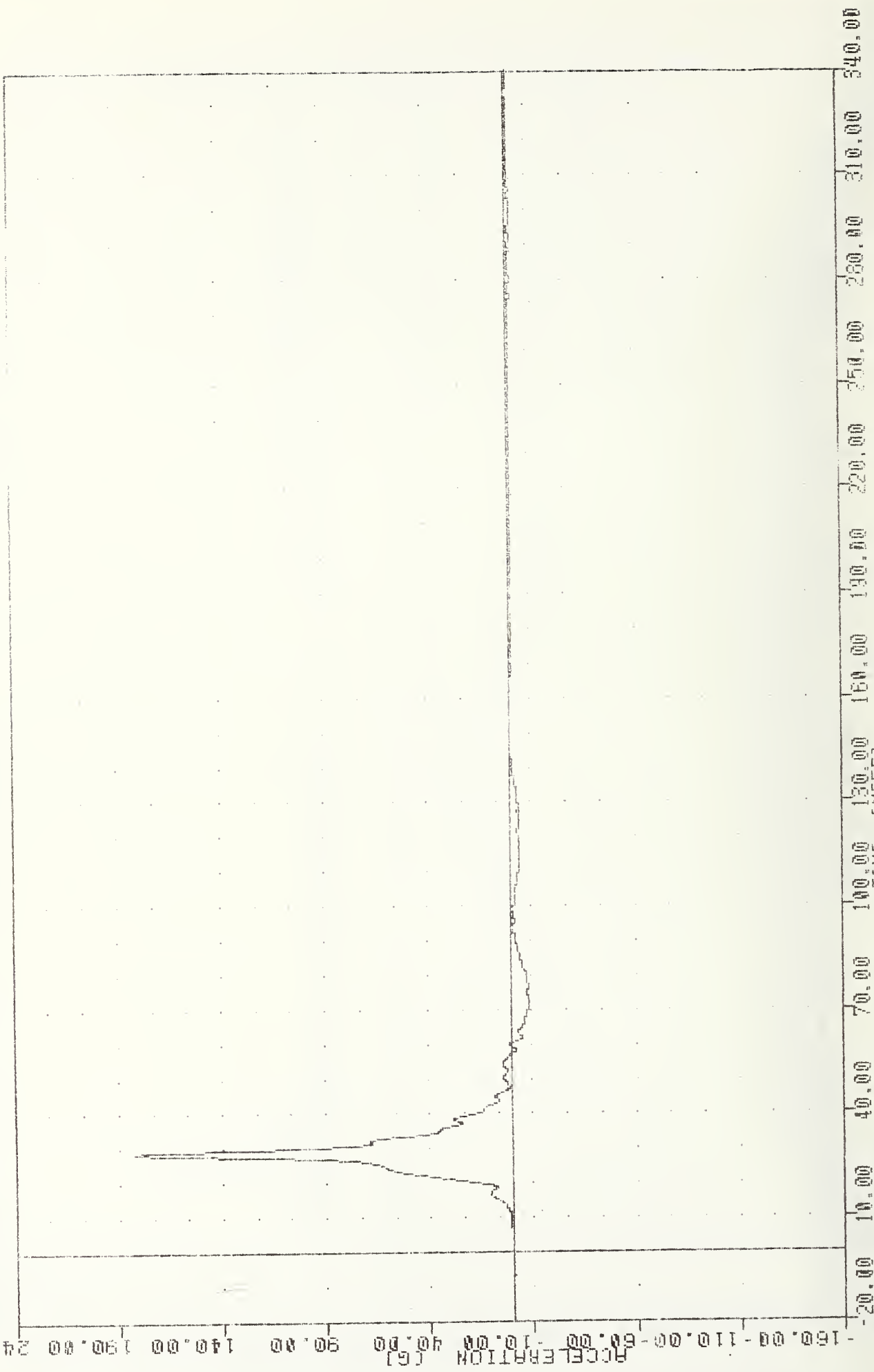
ACCELERATION (G)



TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER PELVIS ACCELERATION - AXIS

TRIP # 830000
 EVALUATION OF MOD VEHICLE
 832730000000
 PEVY63
 PLOT DATE 4-18-68 10:49:28
 FILTER = BLPF 300 949 10
 MIN, MAX VALUES = -8.47 72.75 182.21 26.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER PELVIS ACCELERATION Y AXIS

EVALUATION OF ADD VW FLEET

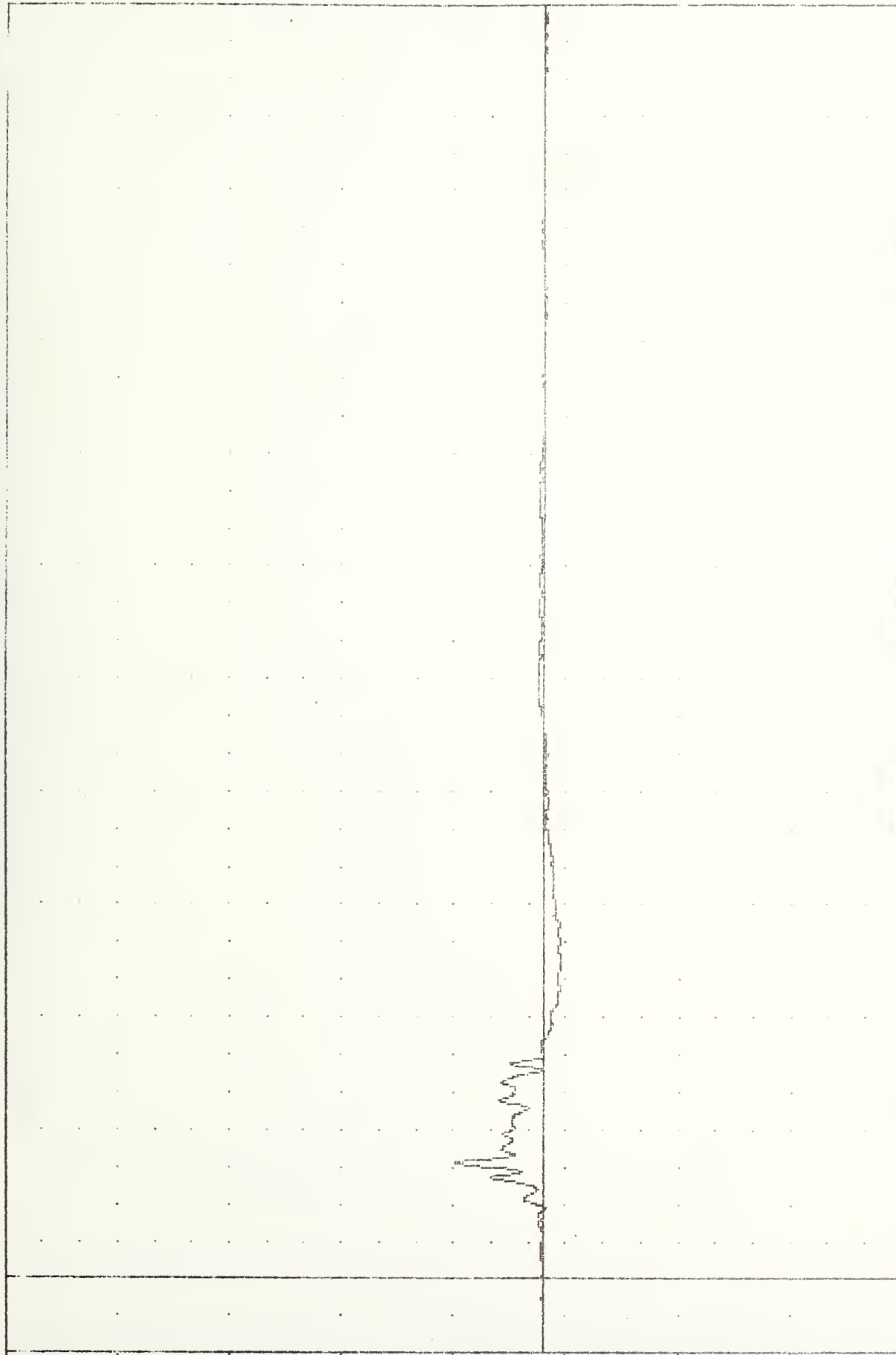
83273000000

PEVZB3

FILTER = BLPF 300/ 342/ 40

MIN. MAX VALUES = -7.892 34.53 39.62 31.80

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS ACCELERATION Z AXIS

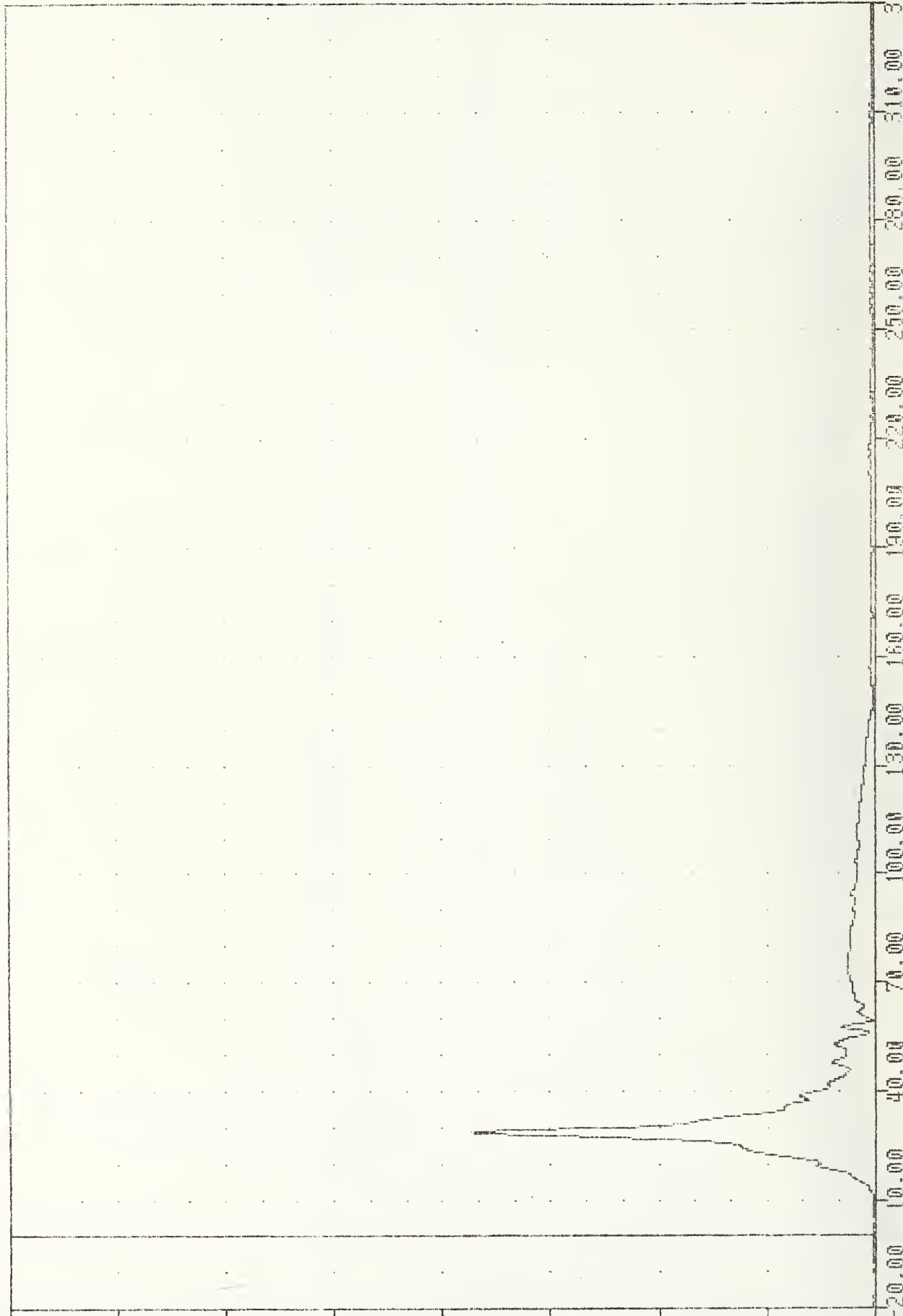
TRC
EVALUATION OF HOD VN FLEET
83275000000
PEVR63

PLD DATE 4-JUL-88 10:46:00

FILTER = BLPF 300/ 949/ 40

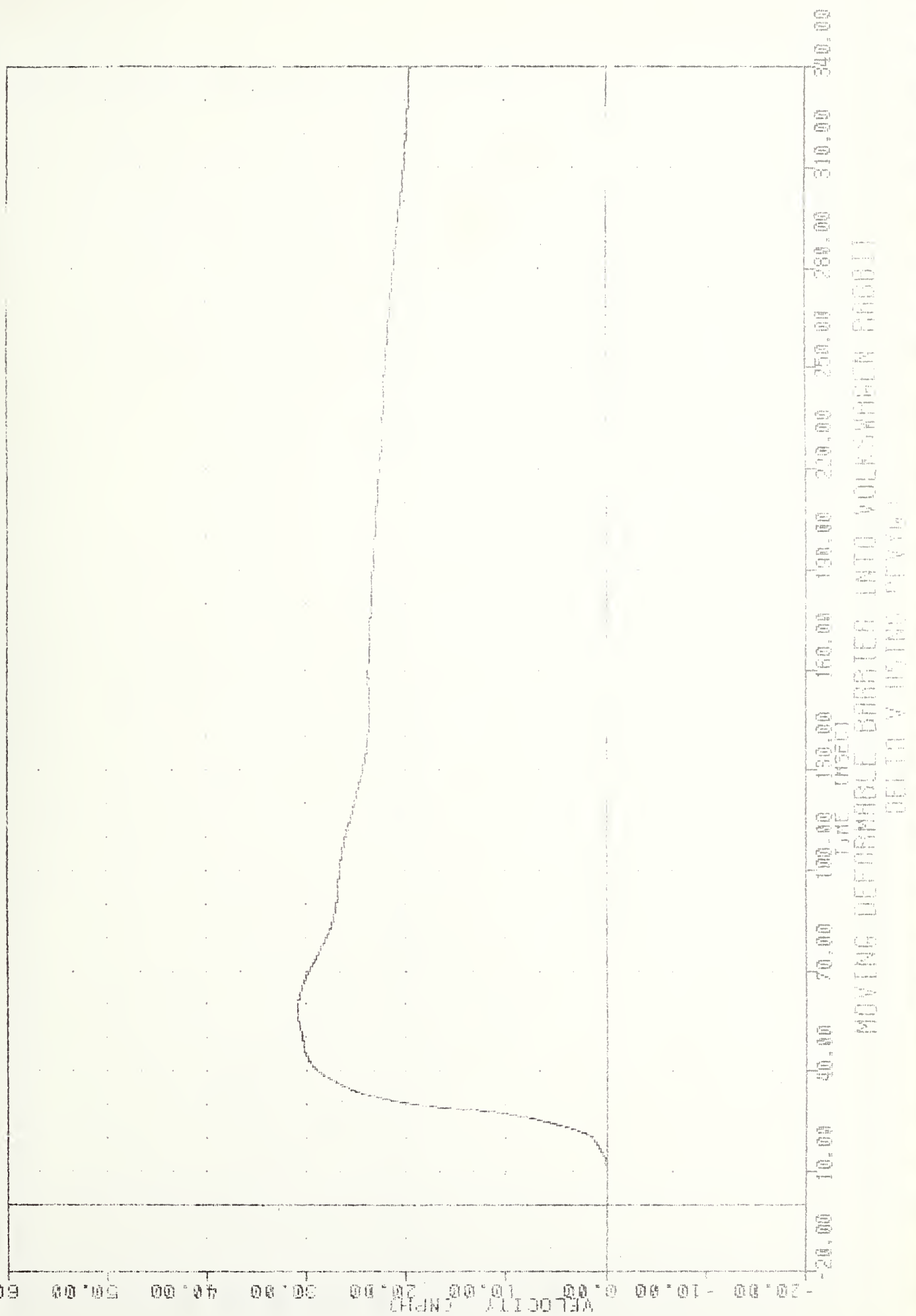
MIN. MAX VALUES = 0.880 -17.75 186.34 28.50

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS RESULT (MM)

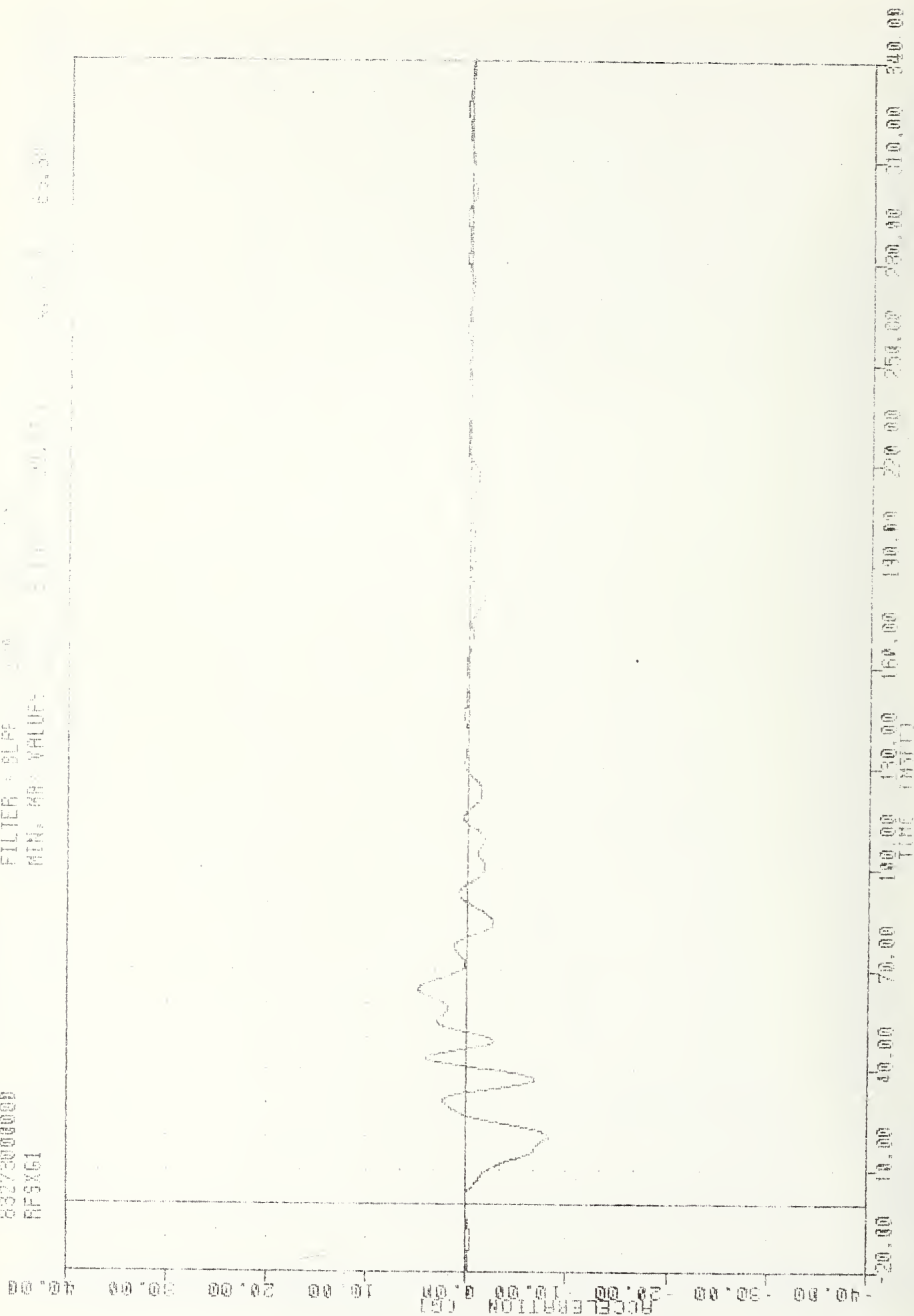
TRC 830930 4-OCT-83 13:51:40
 EVALUATION OF ASD VW FLEET
 83273000000
 PEVYV3
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -0.078 5.25 30.86 3 57.13



TRE
EVALUATION OF NO. 4 FLEET
83273000000
RFSXG1

PLOT UNIT: 4
FILTER: SLP
MIN. NR. VALUES

83273000000
83.30



MOVING DEFORMABLE BARREL INTO VULCANIZING PLANT
VULCANIZING PLANT FRONT VIEW

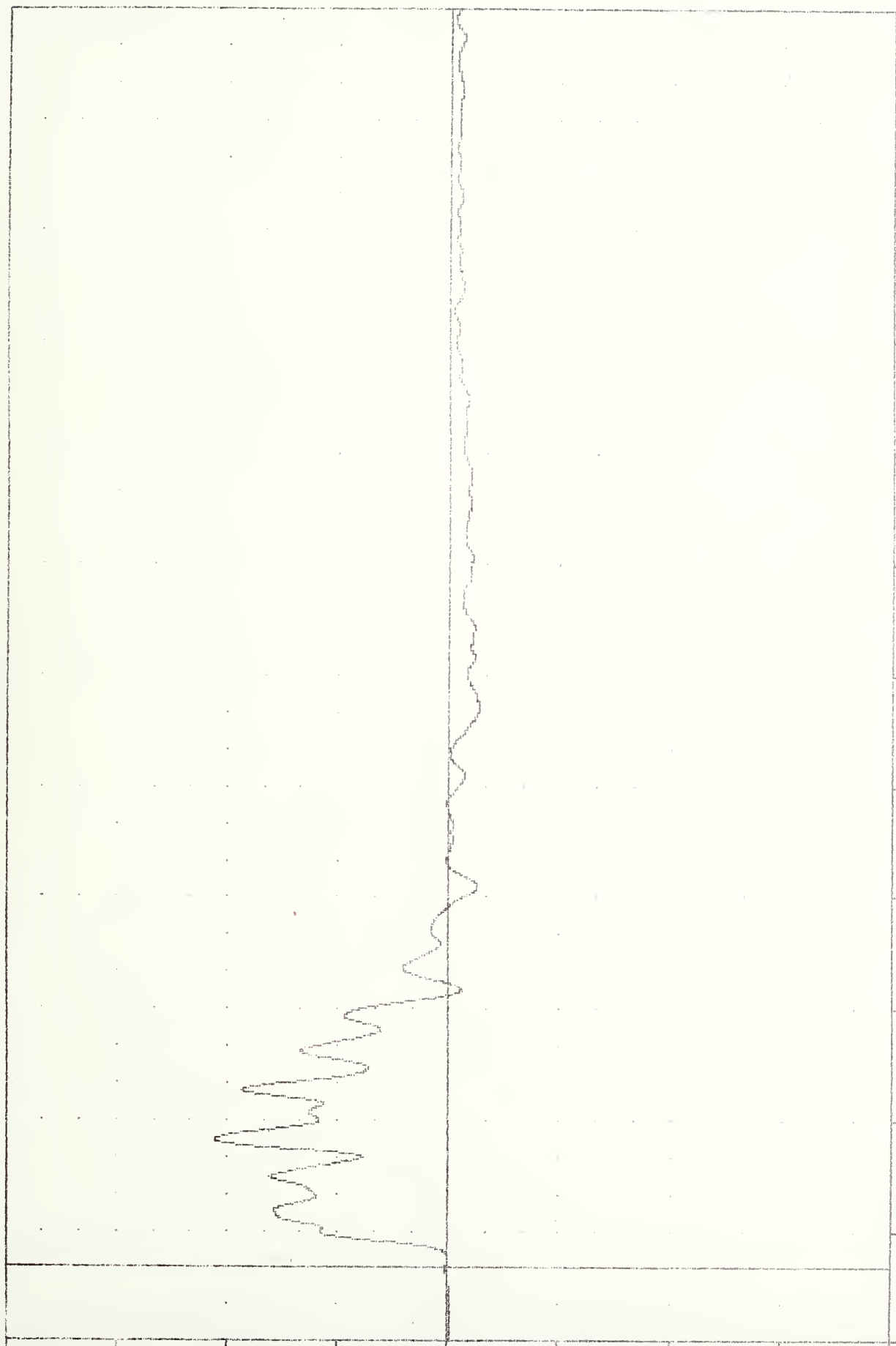
TAC 830930
 EVALUATION OF MOD VN FLEET
 83273000000
 RFSY61

PLOT DATE 4-001-83 10:46.20

FILTER = BLFF 100/ 315/ 40

MIN. MAX VALUES = -2.65e 151.59 21.10 34.50

ACCELERATION G



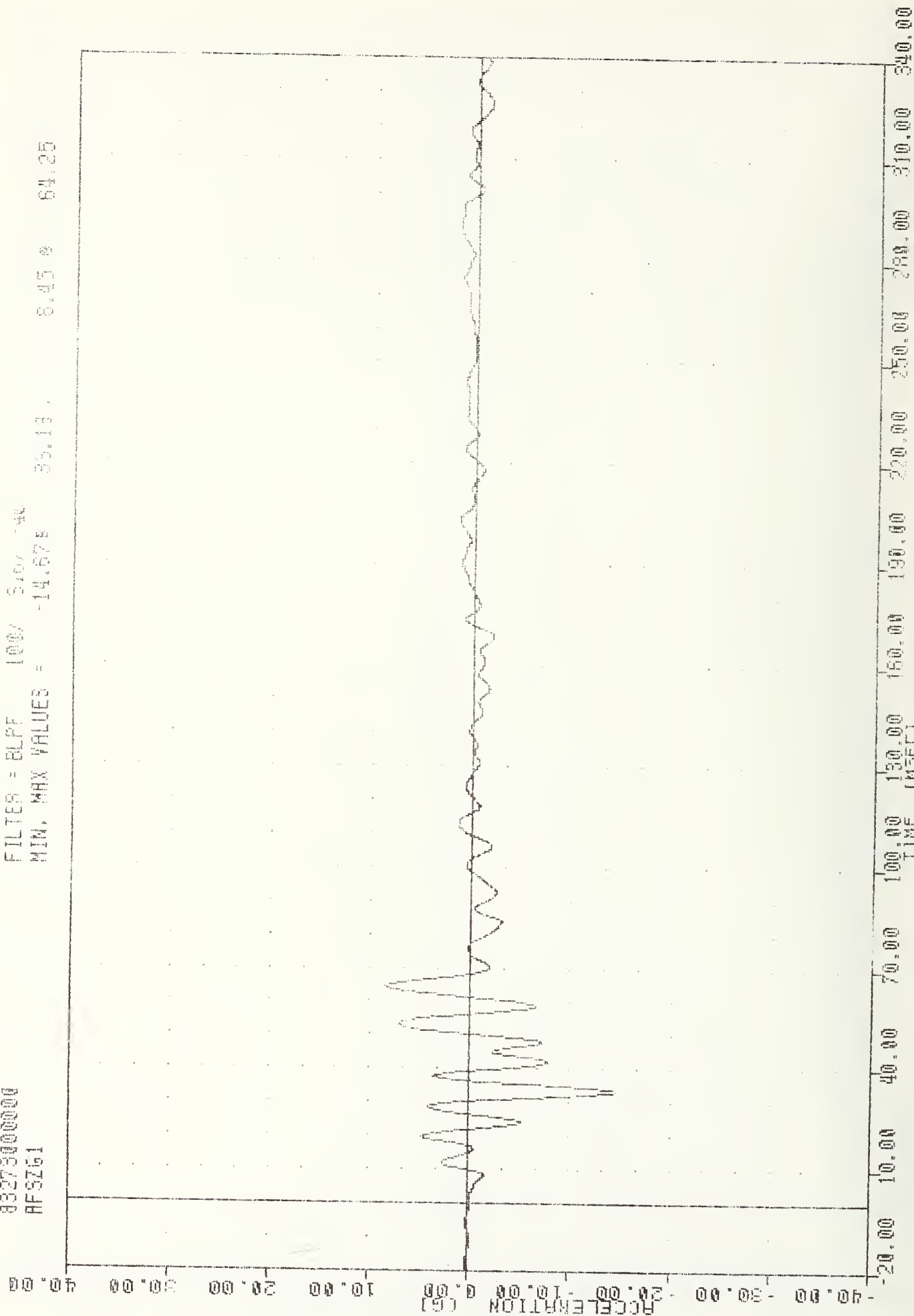
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN PASSAT
 VEHICLE RIGHT FRONT SIDE ACCELERATION Y HYD

TRC
EVALUATION OF MOD VV FLEET
832750000000
AFS261

PLOT DATE 4-DET-00 10:46:20

FILTER = BLPF 100/ 5.0/ 140

MIN, MAX VALUES = -14.675 35.13 8.45 64.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT FRONT SILL ACCELERATION Z AXIS

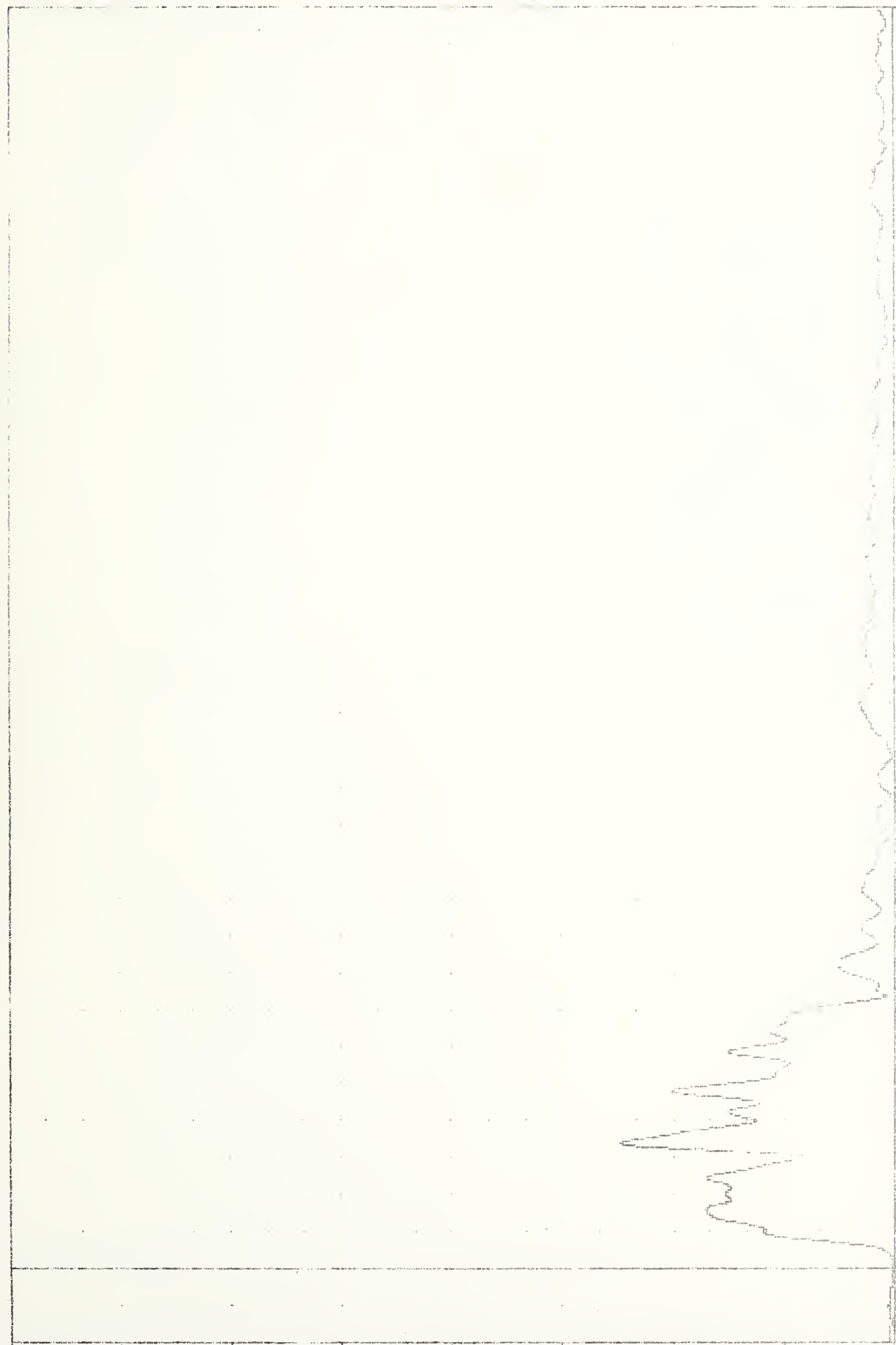
16L
 EVALUATION OF MOD V8 FLEET
 83278300000
 HFSRG1

PLOT DATE 2 OCT-81 10:40-8

FILTER = BLPF 1007 3167-40

MIN. MAX VALUES = 0.103 136.25 31.75 33.80

ACCELERATION (G)



0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 -20.00

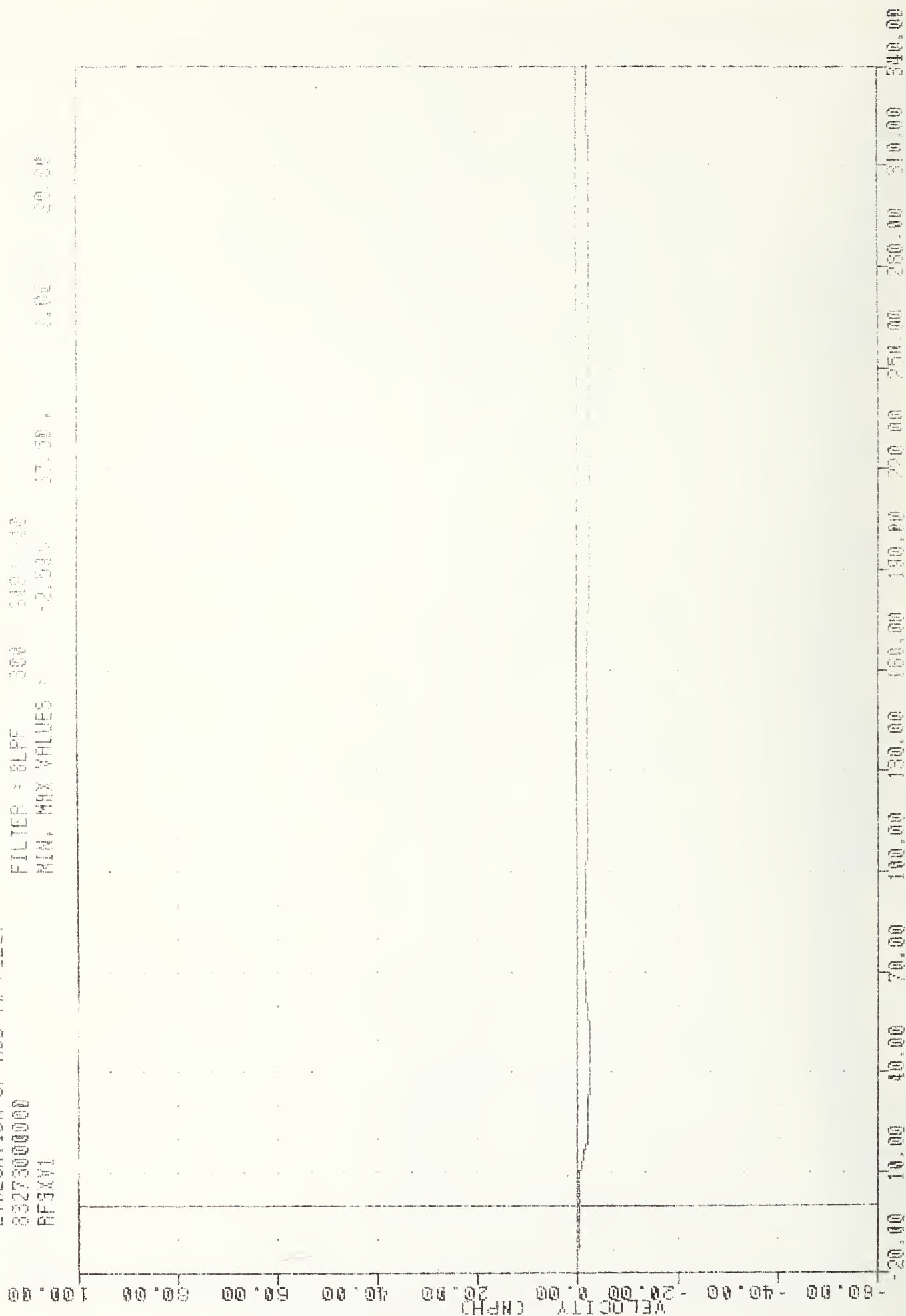
THE CRASH
 MOVING DEFORMABLE BARREL INTO VEHICLE FROM FRONT
 VEHICLE RIGID FROM VEHICLE REAR

TAC
EVALUATION OF HOD VW FLEET
832730000000
RF3XV1

PLOT DATE 4-00-70

FILTER = BLPF 300 340 140

MIN. MAX VALUES -2.00 17.00 2.00 20.00

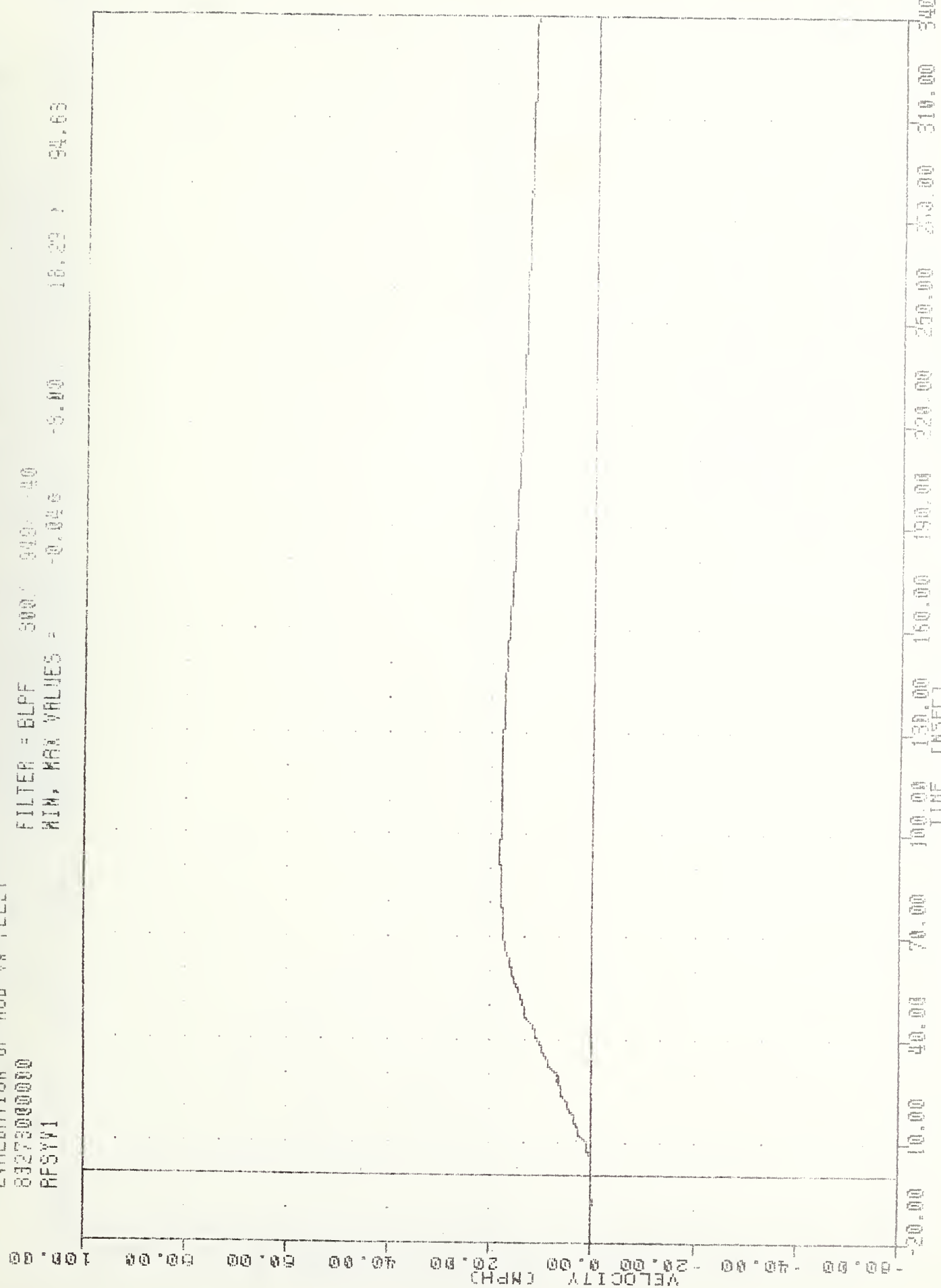


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN CARSET
DELTA - 0.00 17.00 2.00 20.00

TRC
EVALUATION OF MOD VW FLEET
83273000000
RFSYV1

PLOT DATE 11-11-63 13:51

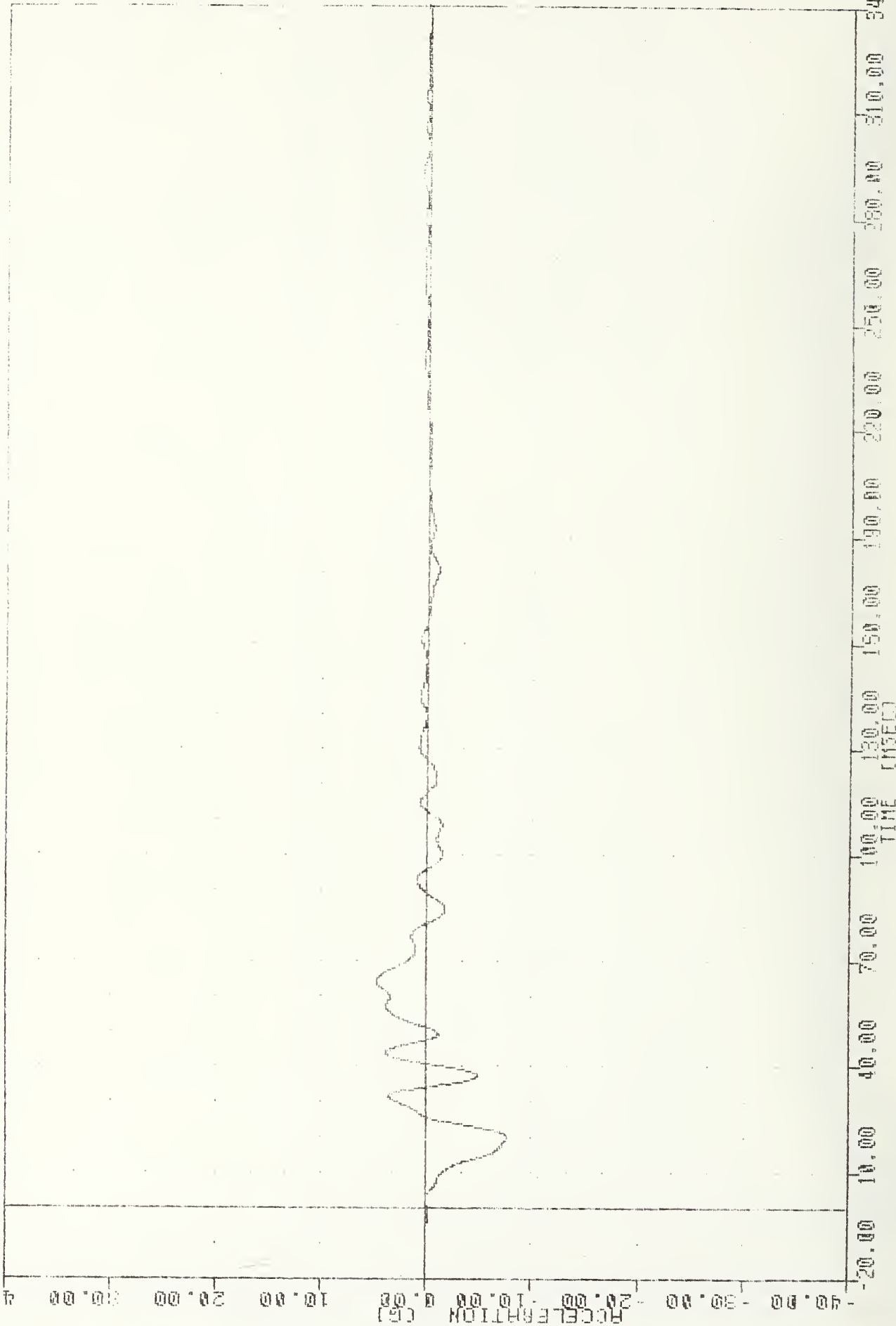
FILTER = BLPF 300.0 949.0 40
MIN, MAX VALUES = -0.046 -8.00 18.29 94.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V 05104 RFSYV1

TAL
 EVALUATION OF MOD VV FLEET
 892730000000
 RRSXG2

PLOT DATE 11-01-76
 FILTER = ELFF 100
 MIN. MAX VALUES = -50.00 50.00



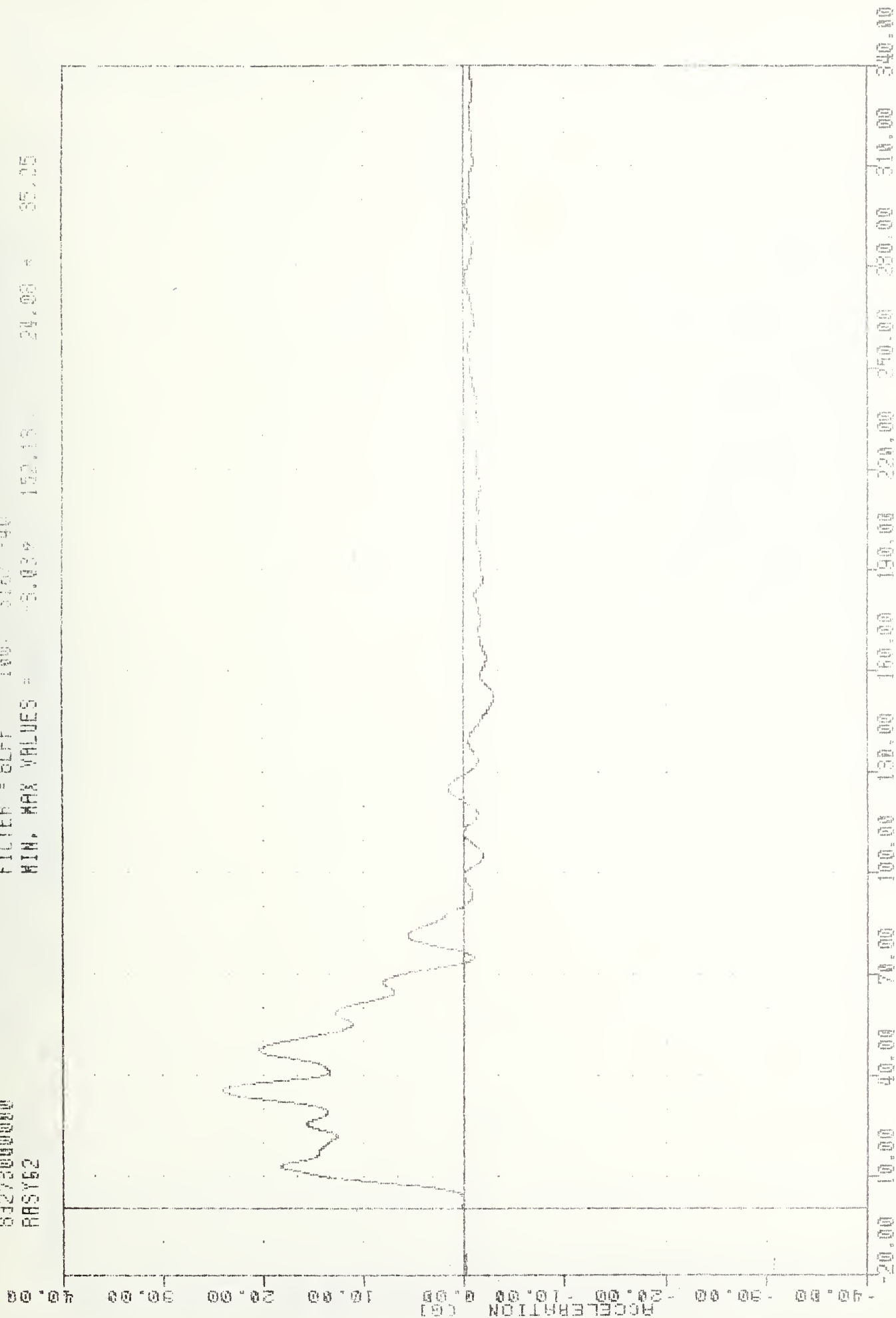
MOVING DEFORMABLE BARRICADE INTO VOLKSWAGEN PASSAT
 VEHICLE RIGHT REAR STILL ACCELERATION X (msec)

TAC
EVALUATION OF MOD VW FLEET
83273000000
RASY52

PLOT DATE 4-01-83

10:40 24

FILTER = SLFF 100: 3187 -40
MIN. MAX VALUES = -8.039 152.13 24.00 35.25



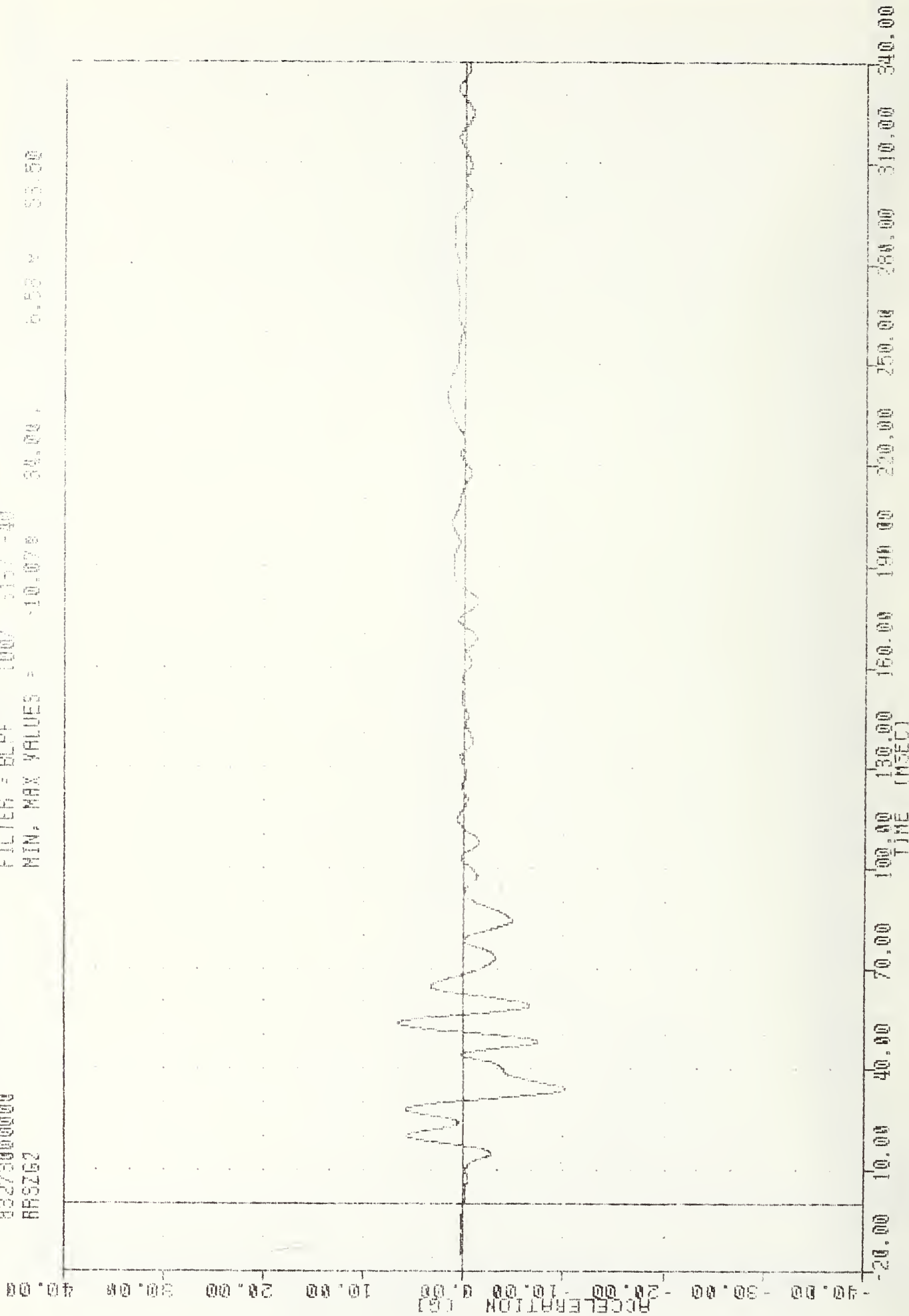
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN MODBIT
VEHICLE RIGHT REAR GILL ACCELERATION (G) X 10

TRC , 830930
 EVALUATION OF NOD VW FLEET
 83273000000
 RRSZG2

PLOT DATE 4-01-83 10:47:26

FILTER = BLF 100/ 513/ -40

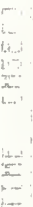
MIN. MAX VALUES = -10.07 34.00 6.53 53.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE RIGHT REAR SILL ACCELERATION 7 AXIS

1. $\frac{1}{2}$
 2. $\frac{1}{2}$
 3. $\frac{1}{2}$

1. $\frac{1}{2}$
 2. $\frac{1}{2}$
 3. $\frac{1}{2}$



TRC 830930
 EVALUATION OF MOD VW FLEET
 8327300000
 ARSXV2

PLOT DATE 4 JUL 80 1451Z
 FILTER - PLPF 800 140 92
 MIN. MAX VALUES -1.267 0.110

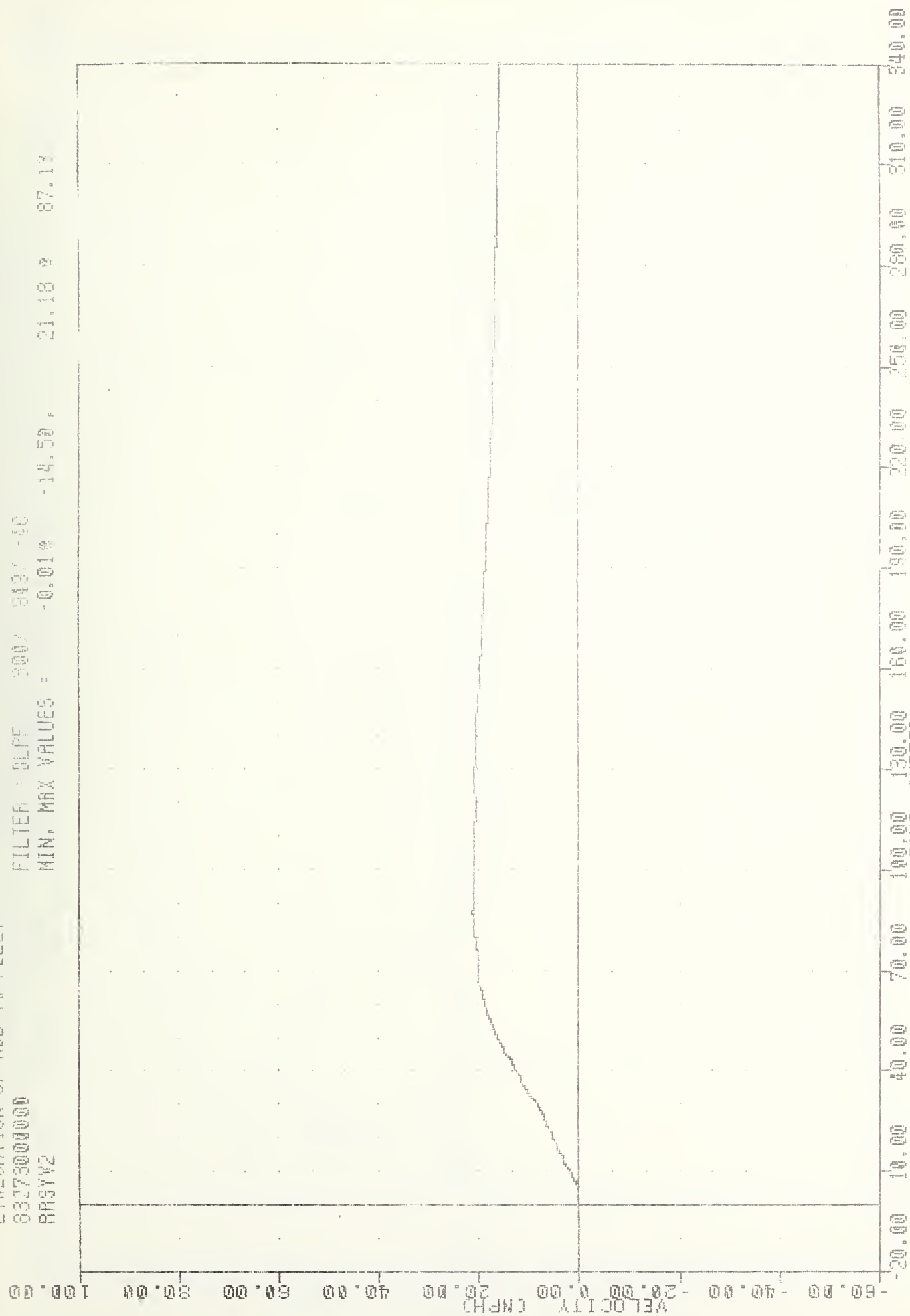


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN PASSAT
 DELTA V USING PASXV2

TRC , 830930
 EVALUATION OF MDD VW FLEET
 832730000000
 RRSYV2

PLOT DATE 4-JUL-85 14:51:11

FILTER : 3LPE 3007 8497 -10
 MIN. MAX VALUES = -0.010 -14.50 21.18 87.13



MOVING DEFORMABLE BARRIER IN VU VOLKSWAGEN RABBIT
 DELTA V USING RRSYV2

PL01 DATE 4-JUL-83 10:45:20

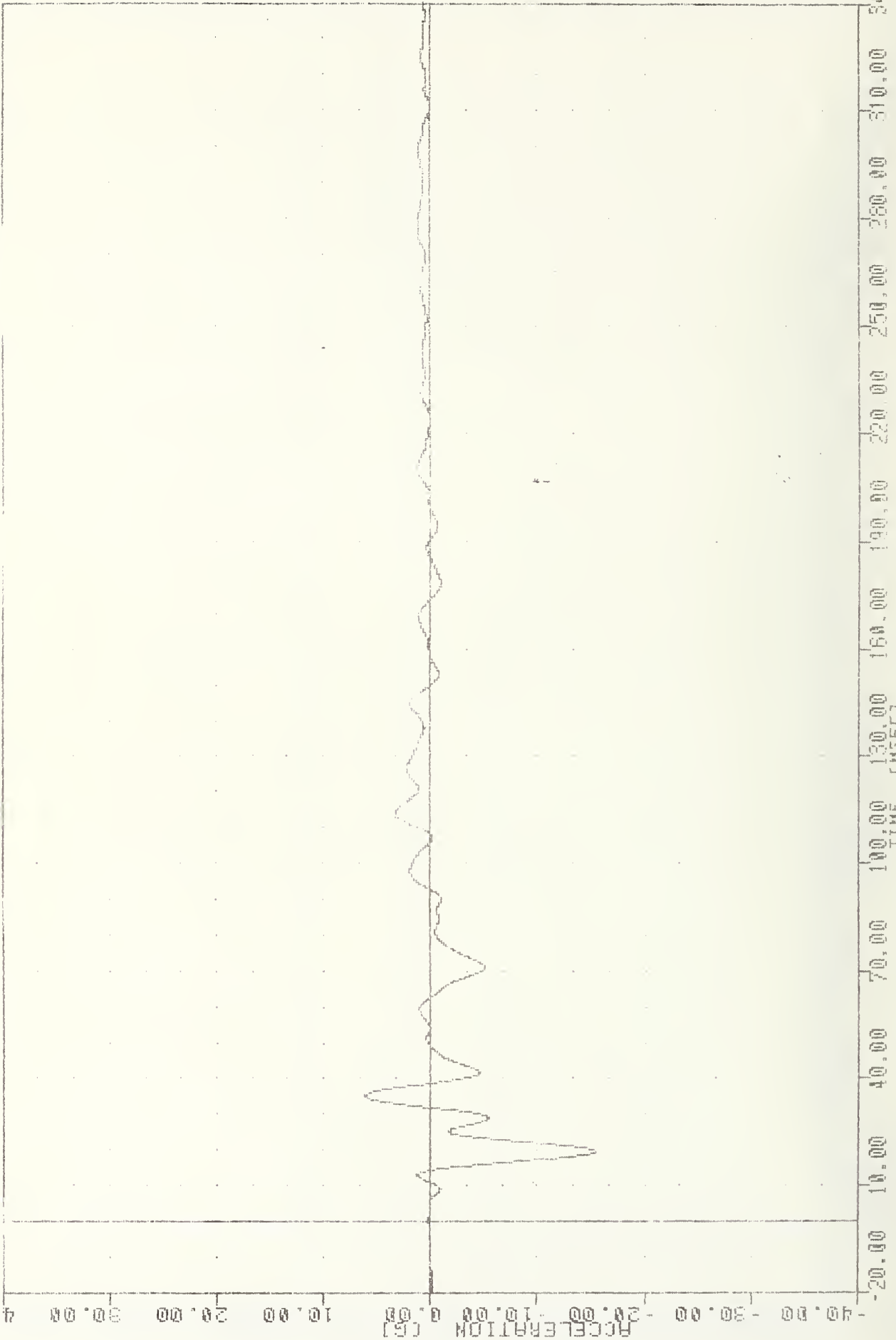
TAC 830930
EVALUATION OF NCD VW FLEET

832730000000

RDXXG3

FILTER = 9LFF 100/ 316 10

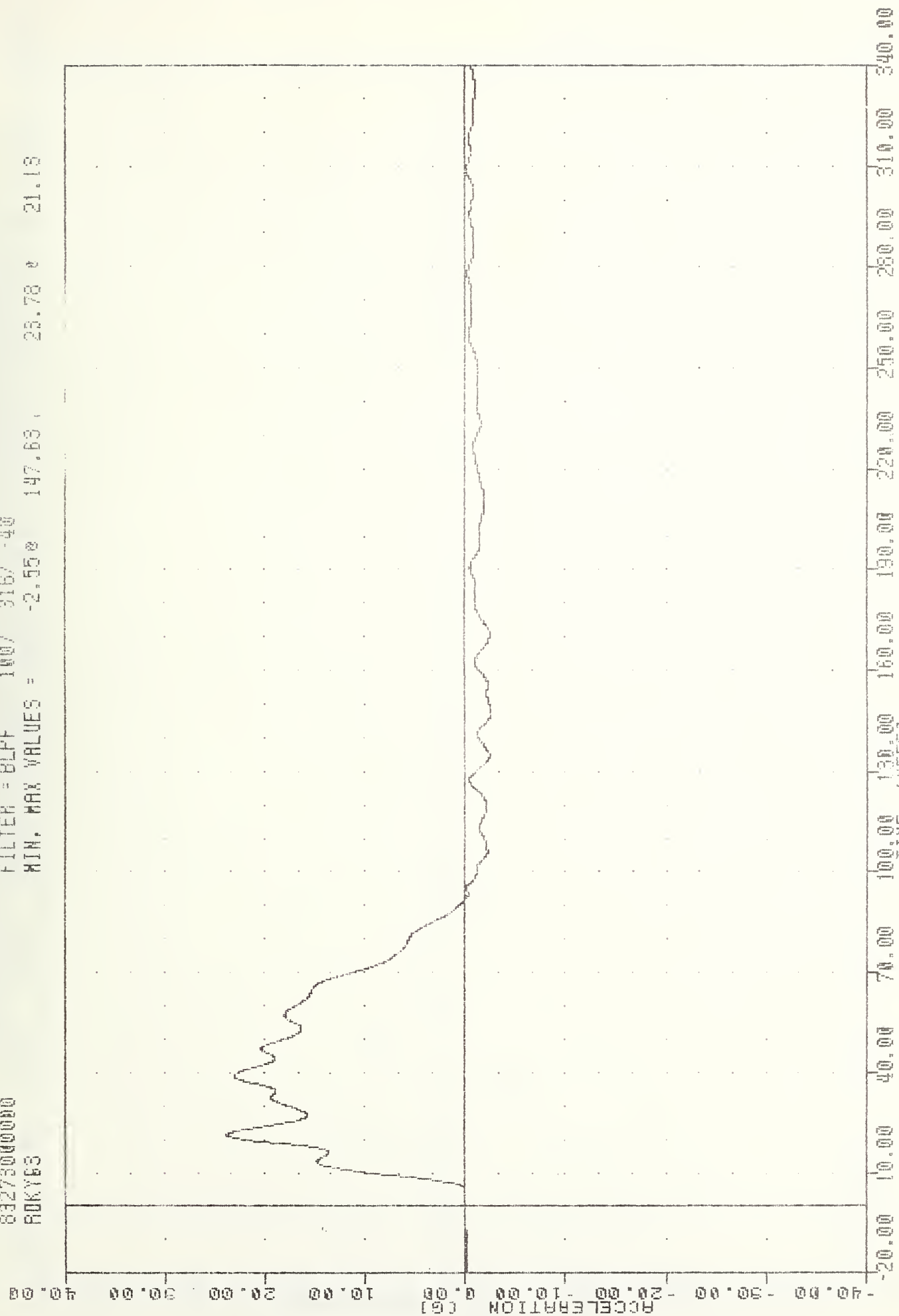
MIN. MAX VALUES = -15.530 19.50, 6.17 35.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK ACCELERATION X AXIS

TAC 830930
 EVALUATION OF MOD VN FLEET
 832730000000
 ROKY63

PLOT DATE 4-JUL-83 10:46:20
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -2.550 147.63 23.78 21.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE REAR DECK ACCELERATION Y AXIS

TRC 830930 4-06-80 10:40:20

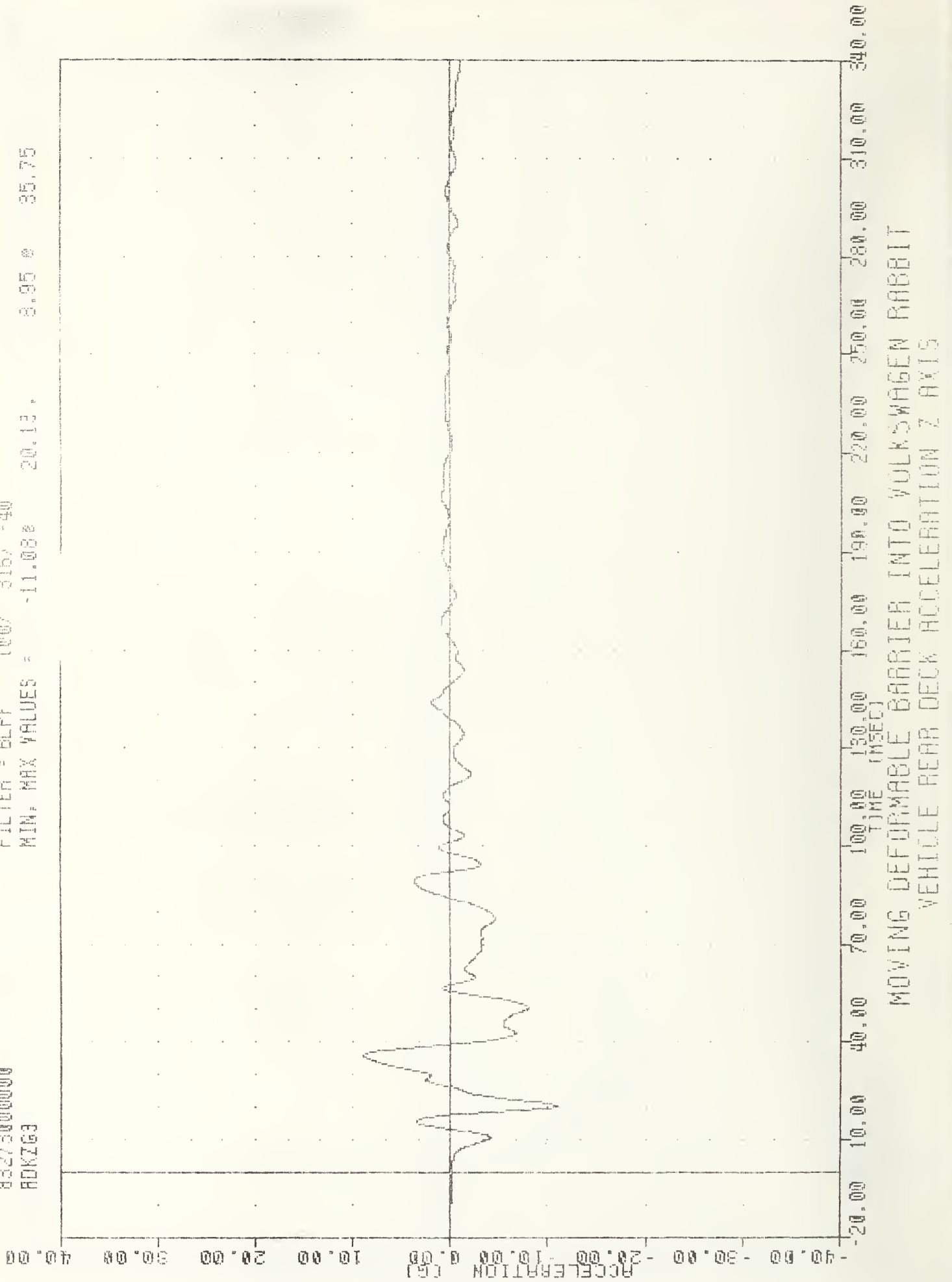
EVALUATION OF HQD VW FLEET

83275000000

ADKZG3

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -11.08 20.13 3.95 35.75



TAC 808830
 EVALUATION OF HOD VR FLEET
 832730000000
 ROKR63
 FILTER = BLPF 100 0.112 0.00 20.25
 MIN. MAX VALUES = 0.112 0.00 20.25



MOVING DEFUMIGANT BURNER INTO VILL WITHIN HODBIT
 VEHICLE REPAIR UNIT IN OPERATION

TR

00000000

00000000

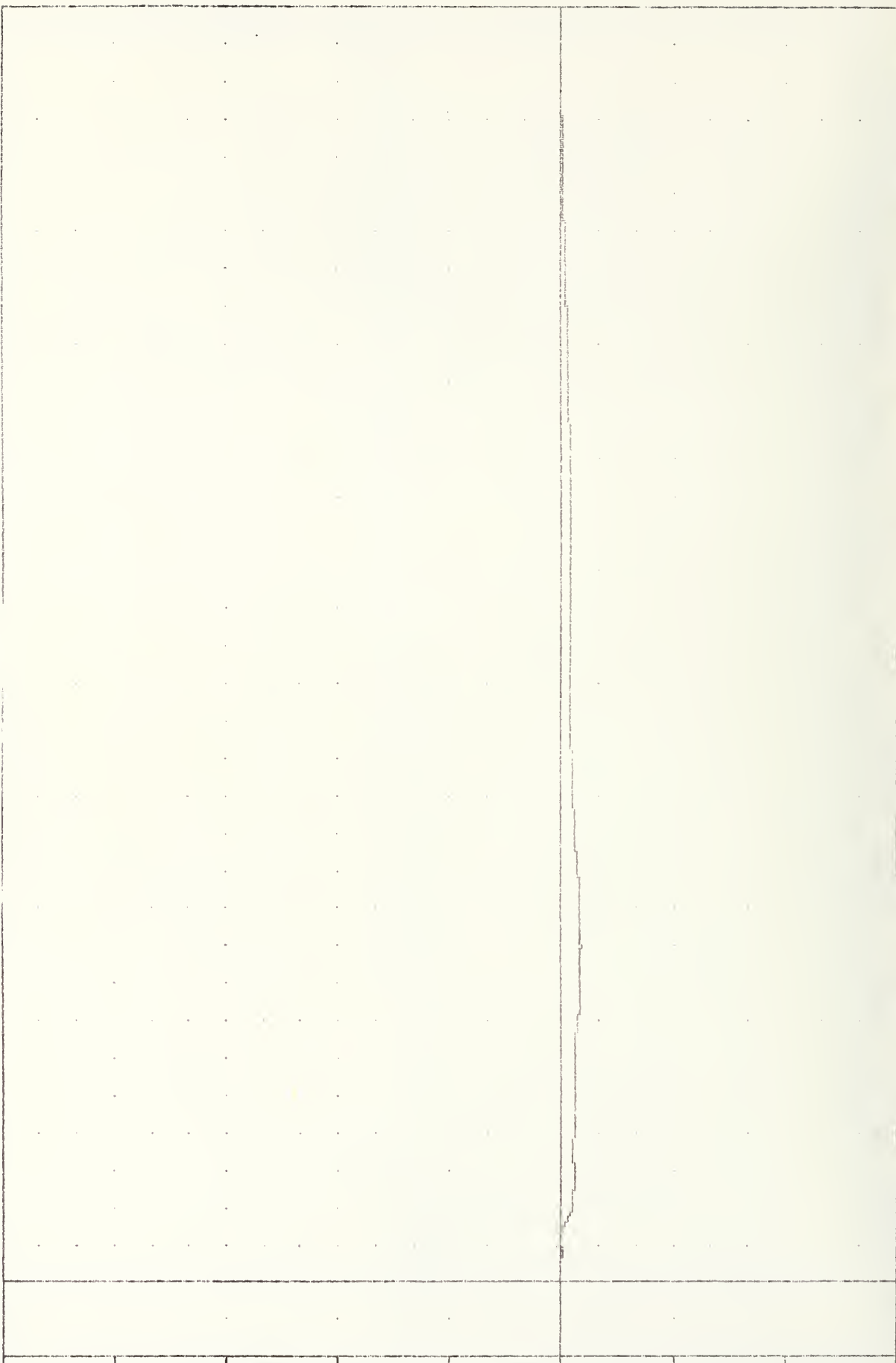
00000000

TAL
EVALUATION OF HOD VW FLEET
832730000000
ADKXV3

PLT DATE 4-06-83 13:51:45
FILTER = BLPF 300 915 40
MIN, MAX VALUES = -3.44 89.50

0.37 340.00

VELOCITY (MPH)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN PASSAT
DELTA V USING ADKXG7

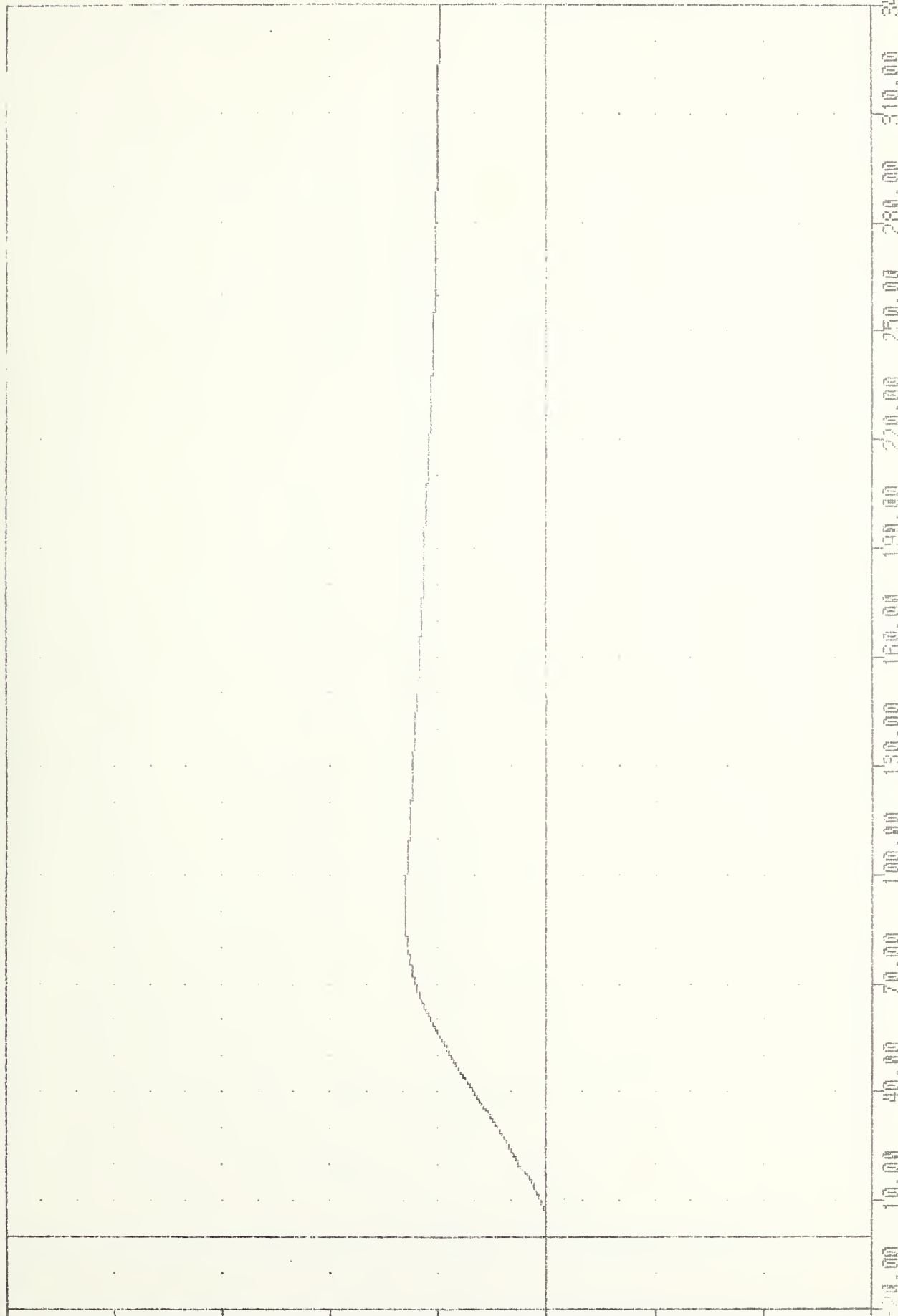
TRC
EVALUATION OF MOD VW FLEET
83273000000
ADKYV3

PL01 DATE 4-ULI-80 13:51:45

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -0.02 26.01 89.00

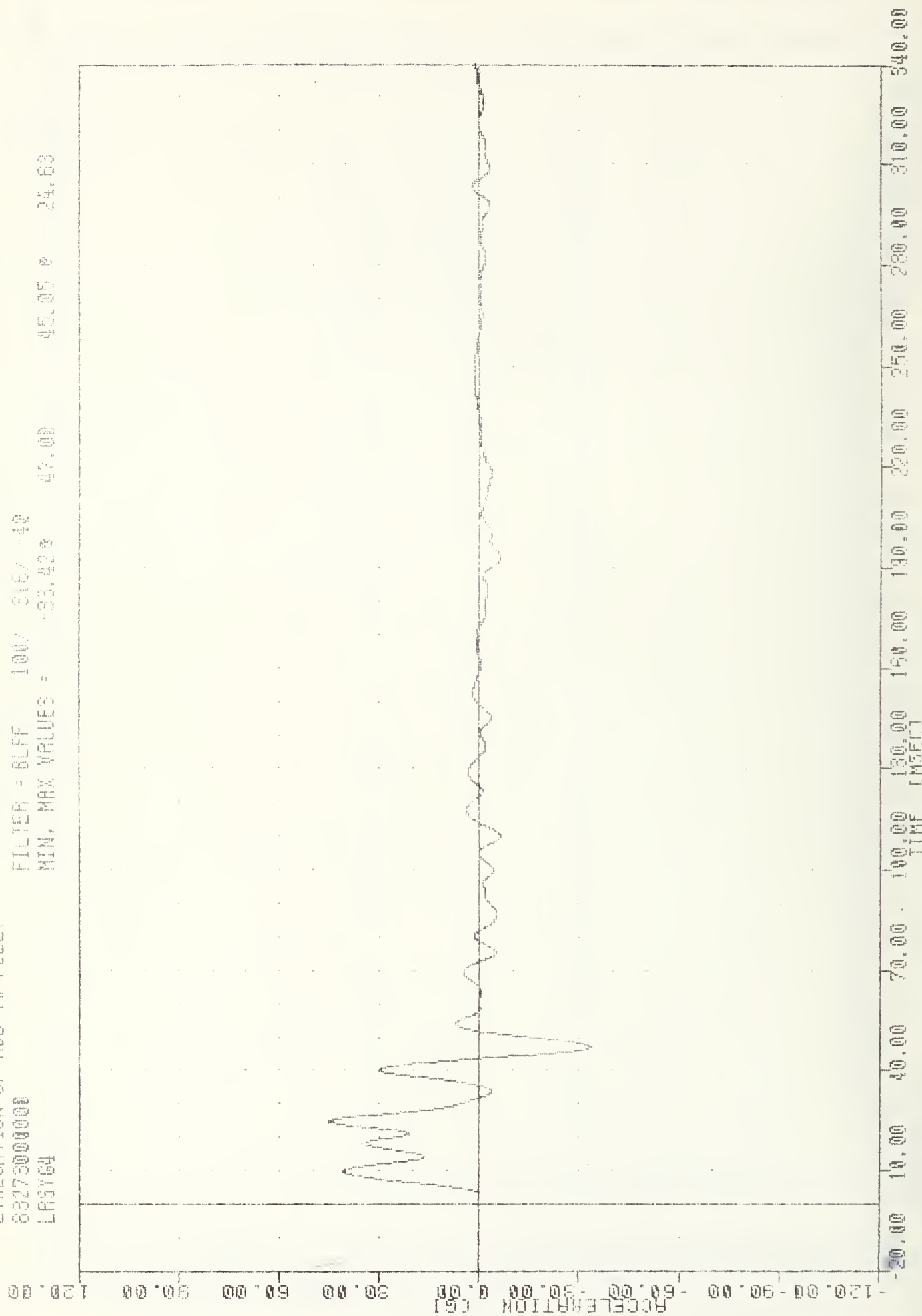
VELOCITY (MPH)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING RDMV3

TRC 000930
 EVALUATION OF MDD VW FLEET
 832730000000
 LRSY64

PLOT DATE 4 JUL 85 12:40 PM
 FILTER = 6LFF 100/ 315/ -42
 MIN. MAX VALUES = -33.428 47.000 45.05 24.63

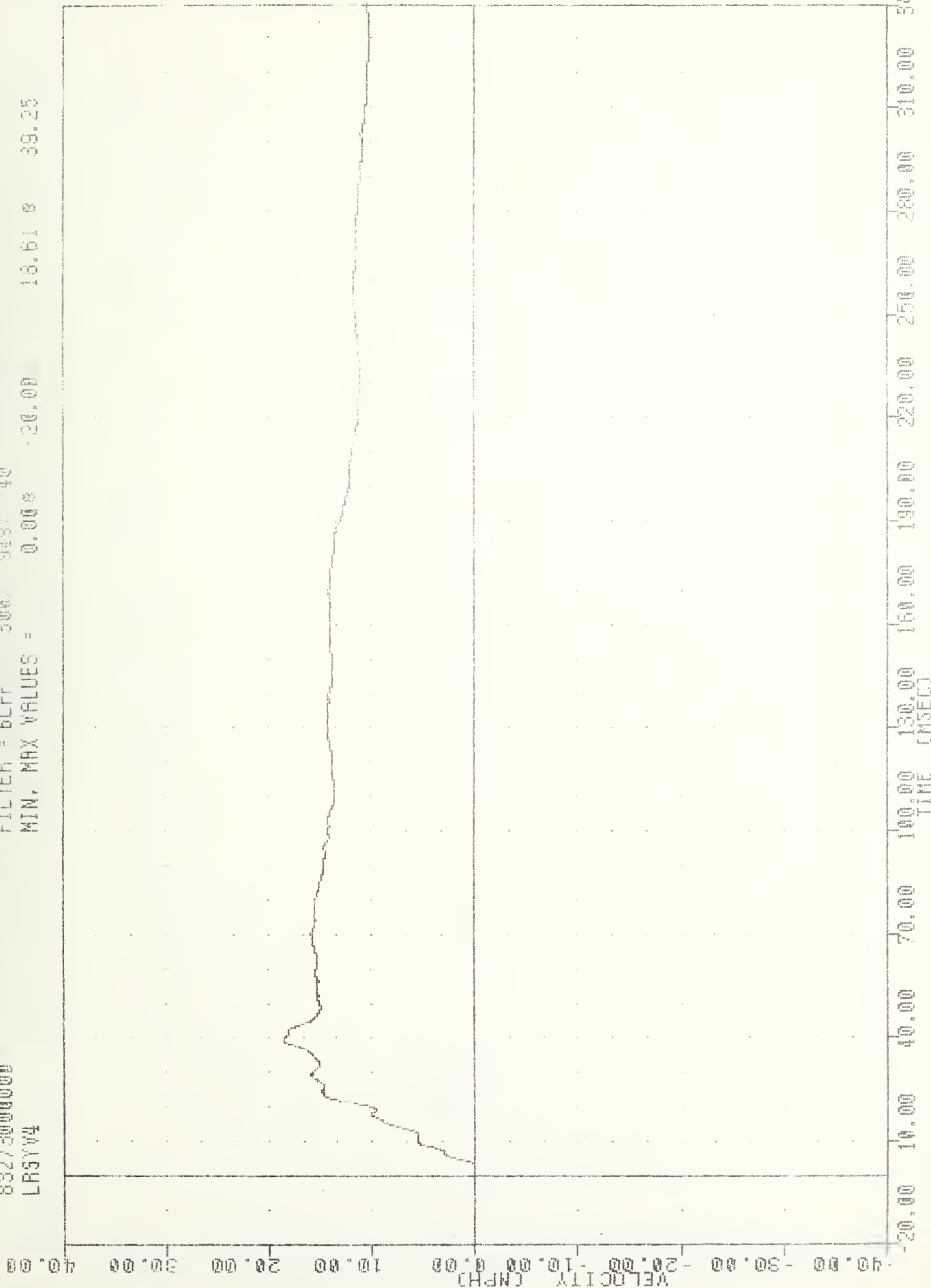


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT REAR SILL ACCELERATION Y AXIS

TRC 8300930
 EVALUATION OF MDD VW FLEET
 832730000000
 LR3YV4

PLOT DATE 4-06-83 15:00:45

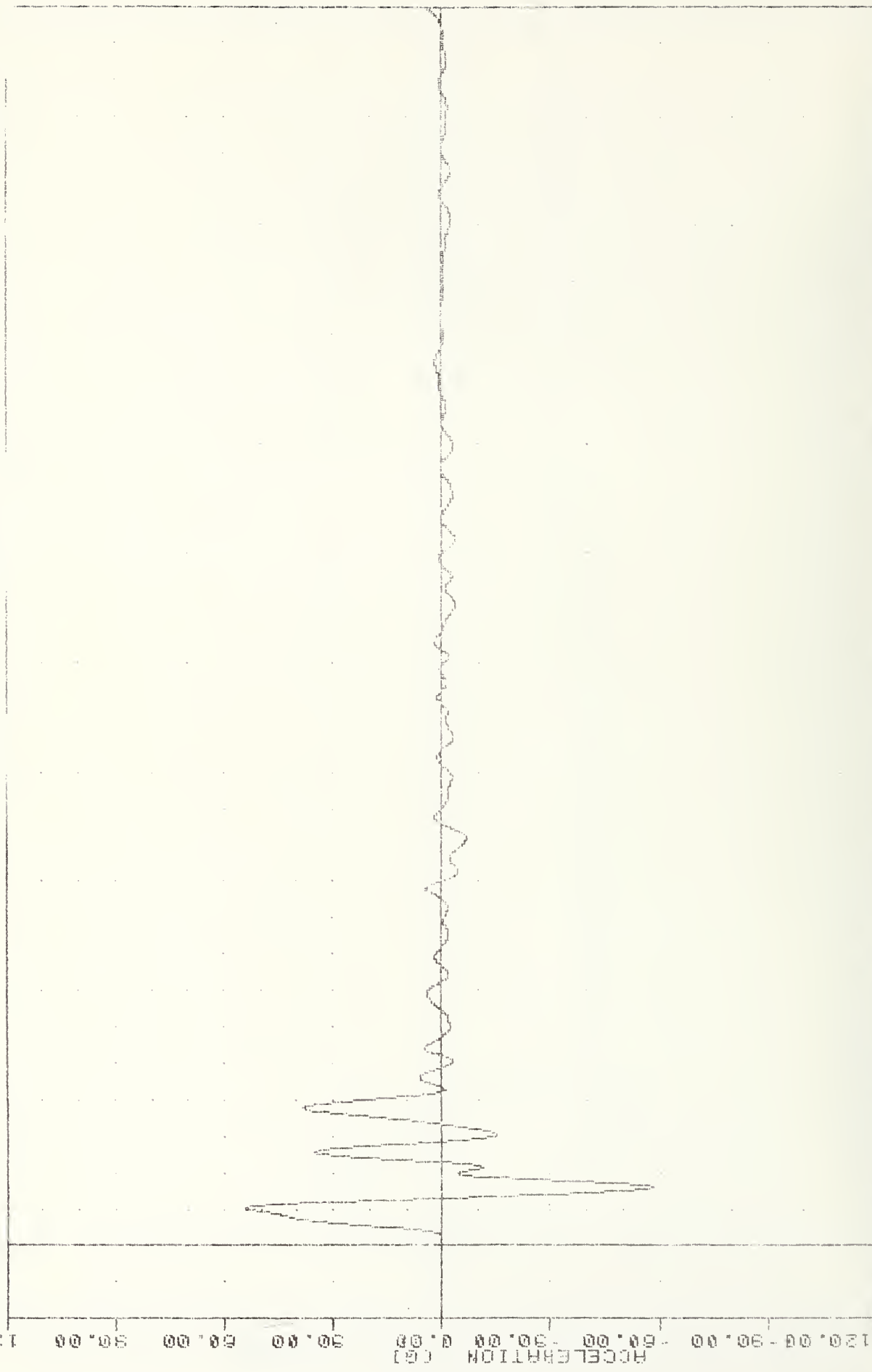
FILTER = BLPF 300/ 319/ 40
 MIN. MAX VALUES = 0.000 -20.00 18.61 39.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING IRS-64

TAC 830430
EVALUATION OF MOD VW FLEET
832750000000
LFSY65

PLOT DATE 4-000000 10:14 AM
FILTER = BLPF 100/ 015/ 40
MIN. MAX VALUES = -53.99% 54.40 10.13

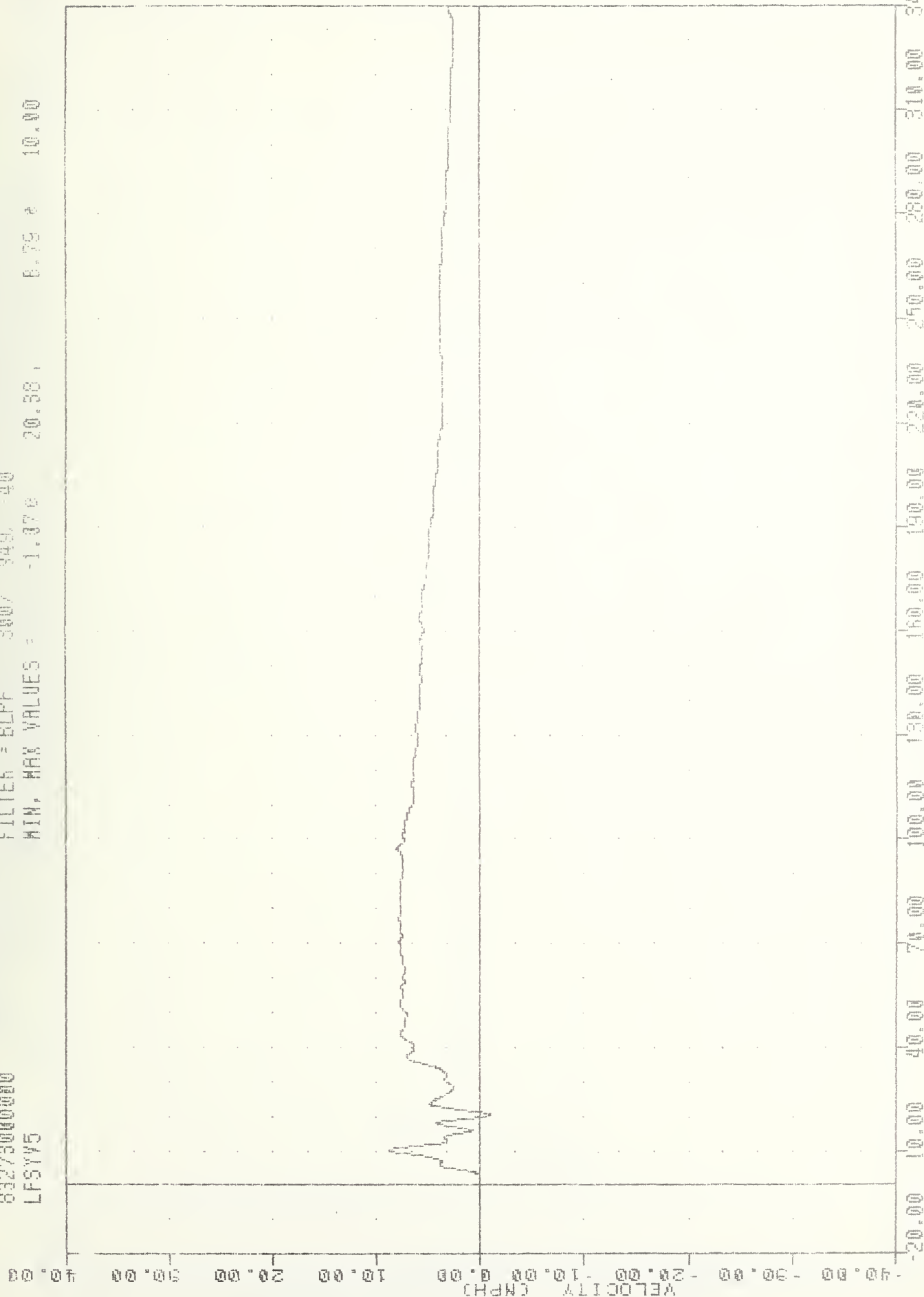


-120.00 -90.00 -60.00 -30.00 0.00 30.00 60.00 90.00 120.00
20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN PASSAT
VEHICLE LEFT FRONT SHOCK ATTENUATION 7 HX15

TAC 830930
 EVALUATION OF HOB VW FLEET
 83273000000
 LFSYV5

PL01 DATE 4-01-85 13:01:45

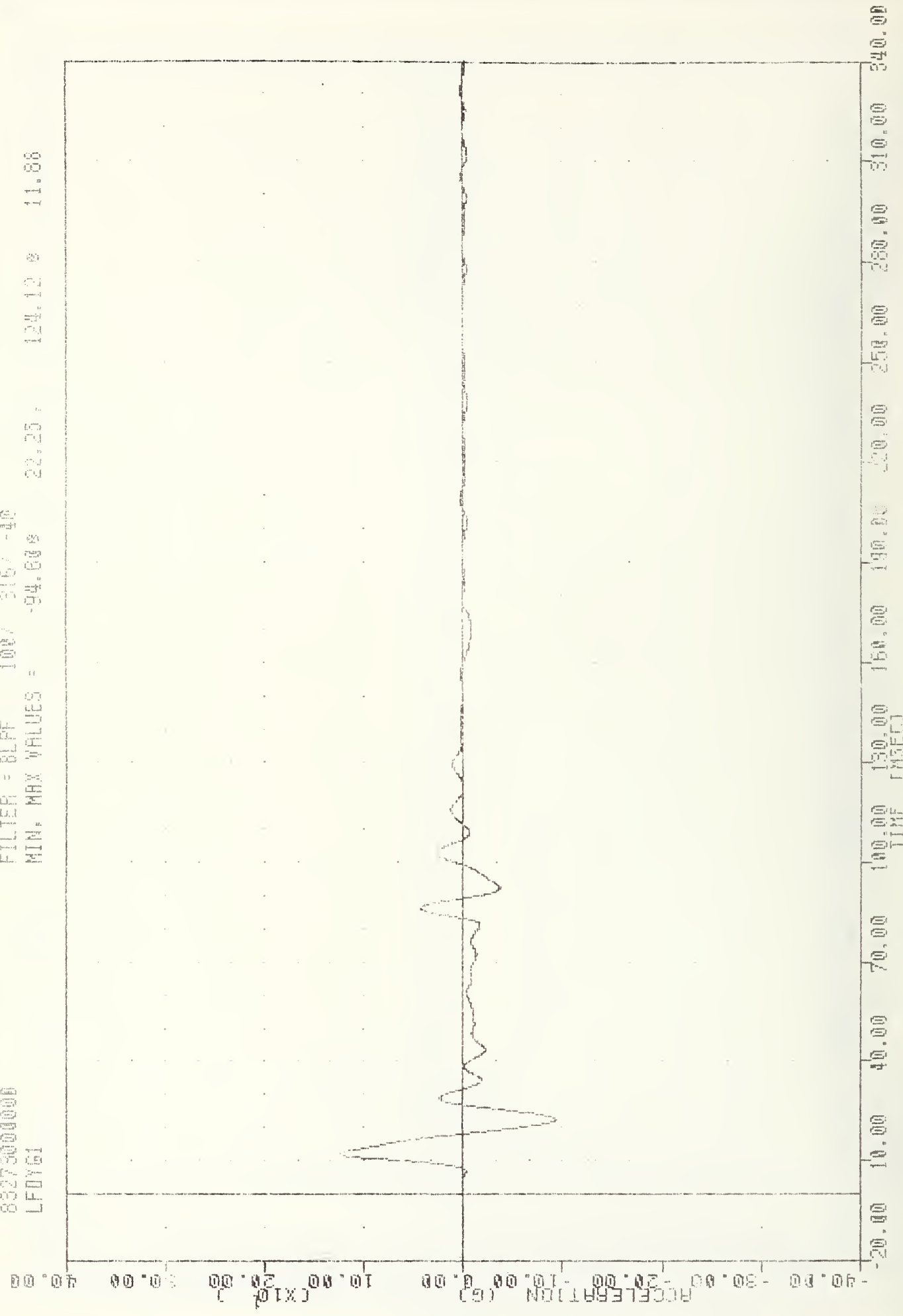
FILTER = BLPF 300/ 349.40
 MIN. MAX VALUES = -1.370 20.38 8.79 10.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LFSYV5

TRC 830930
 EVALUATION OF NBD VW FLEET
 83273000000
 LFDY61

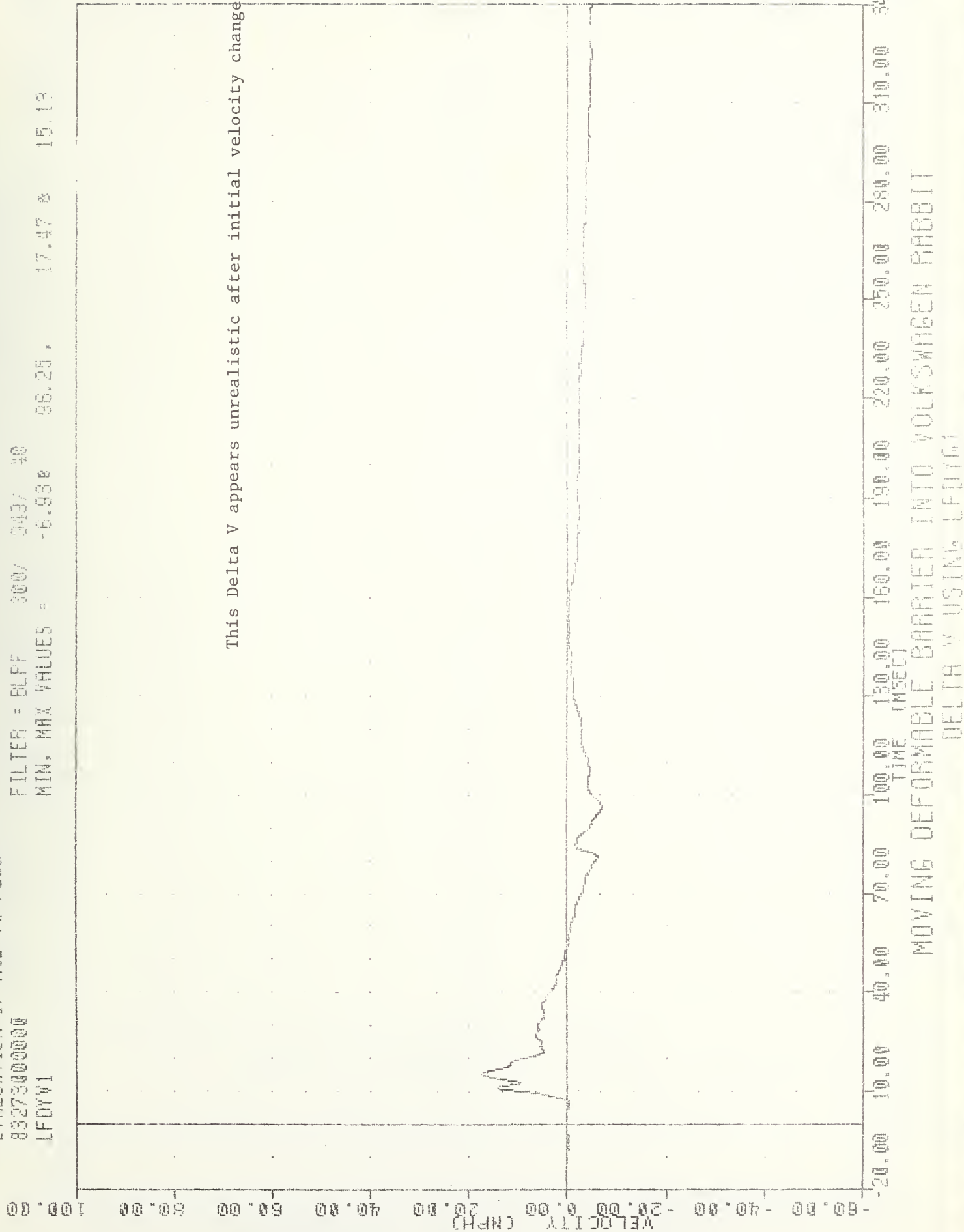
PL01 DATE 4-01-60 14.40:20
 FILTER = 8LFF 100/ 316/-40
 MIN. MAX VALUES = -94.00 22.25 124.12 11.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT FRONT DOOR POSITION 61 OCCUPANTION Y AXIS

TRC 830930
EVALUATION OF MOD VW FLEET
83273000000
LFDYV1

PLU: DATE 4-OCT-83 13:01:45
FILTER = BLPF 300/ 043/ 40
MIN, MAX VALUES = -6.930 96.25, 17.47 15.13



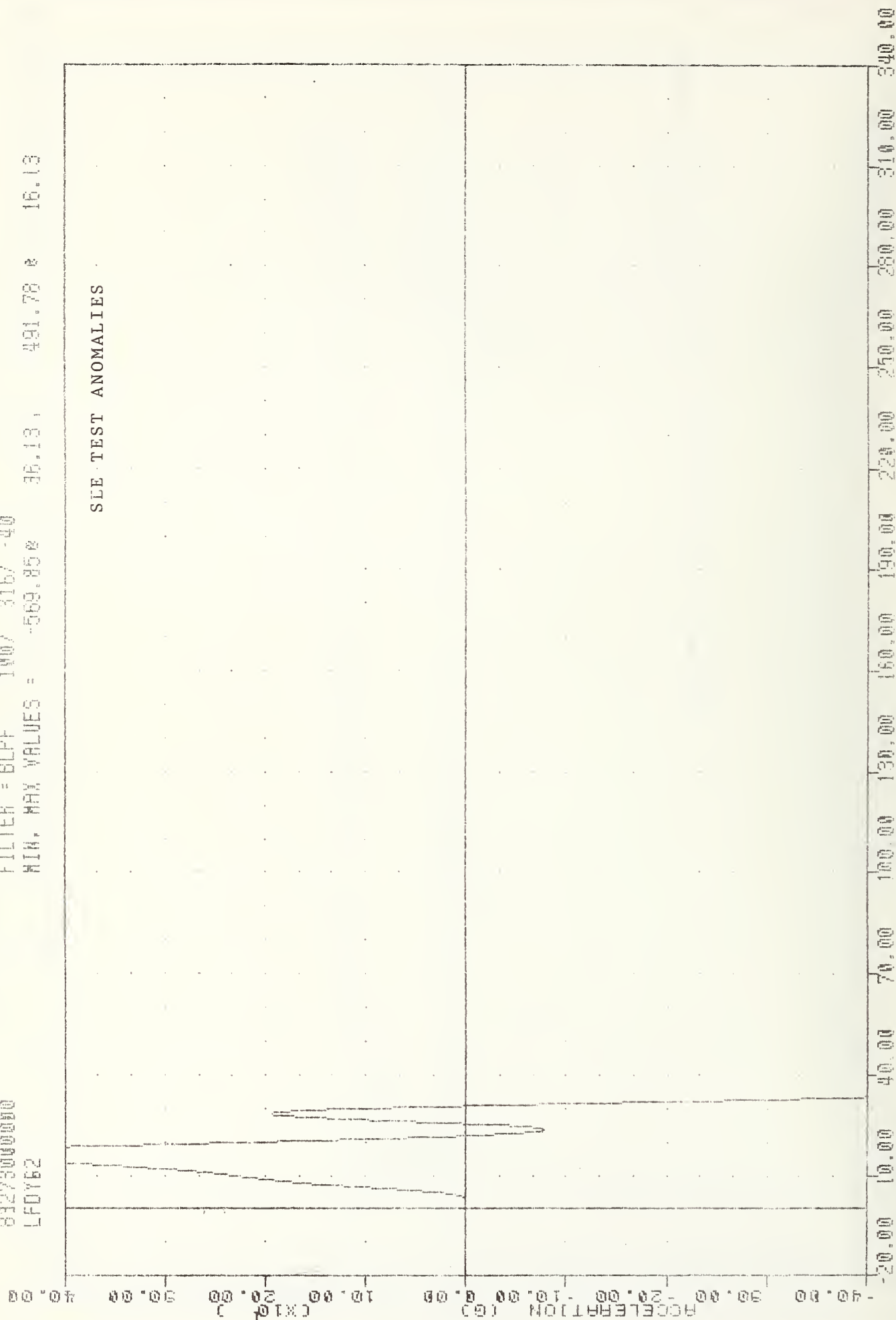
TRC 830930
 EVALUATION OF MOD VN FLEET
 83273000000
 LFDY62

PLOT DATE 4-JUL-83 10:46:20

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -569.85 36.13 491.78 16.13

SLE TEST ANOMALIES



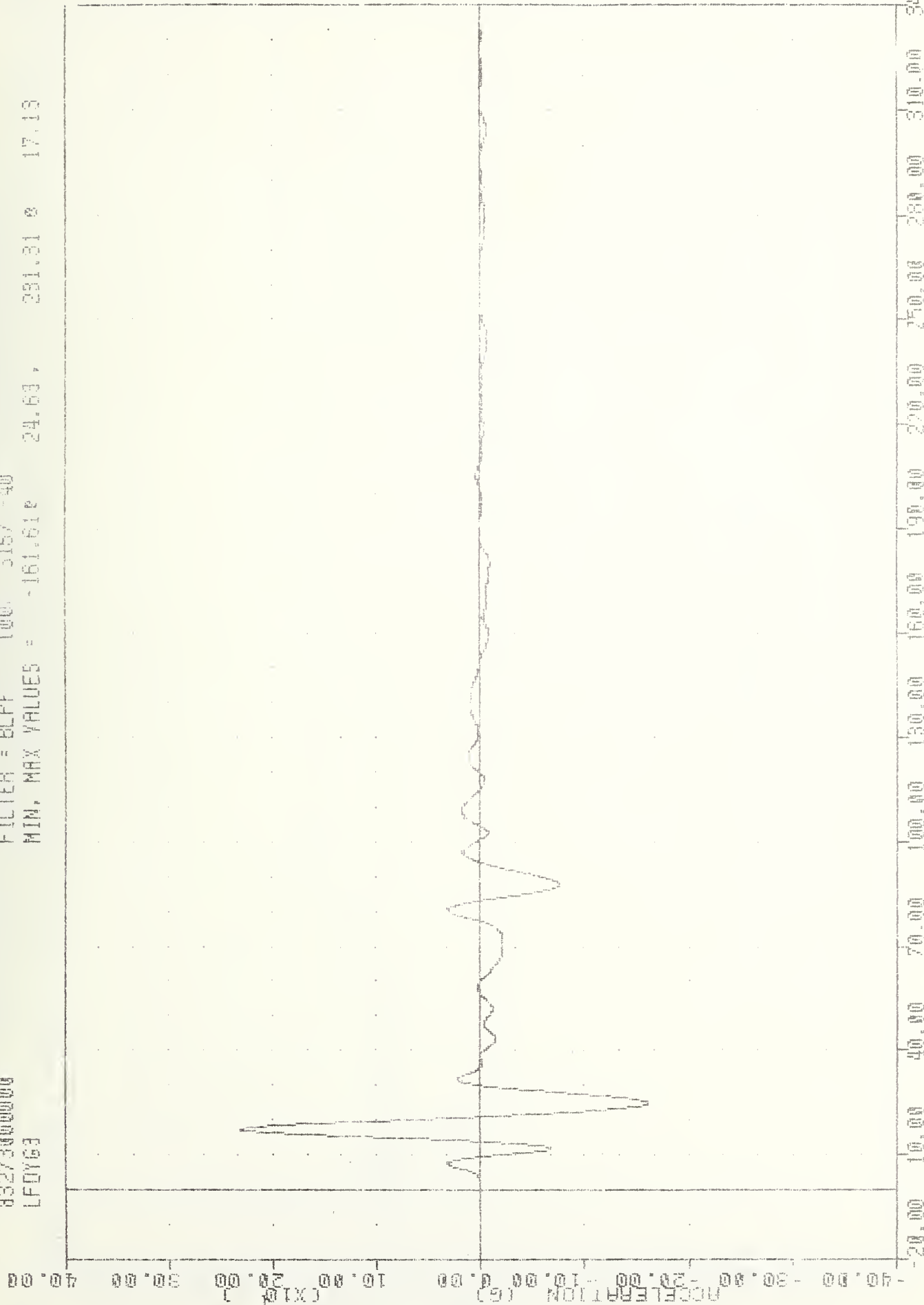
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT FRONT CORNER POSITION AT ACCELERATION X AXIS

TRC 830930
 EVALUATION OF MOD YW FLEET
 83273000000
 LFOY63

PL01 DATE 4-ULI-83 10:48:30

FILTER = BLPF 100. 3187-40

MIN. MAX VALUES = -161.61e 24.63, 231.31 e 17.13



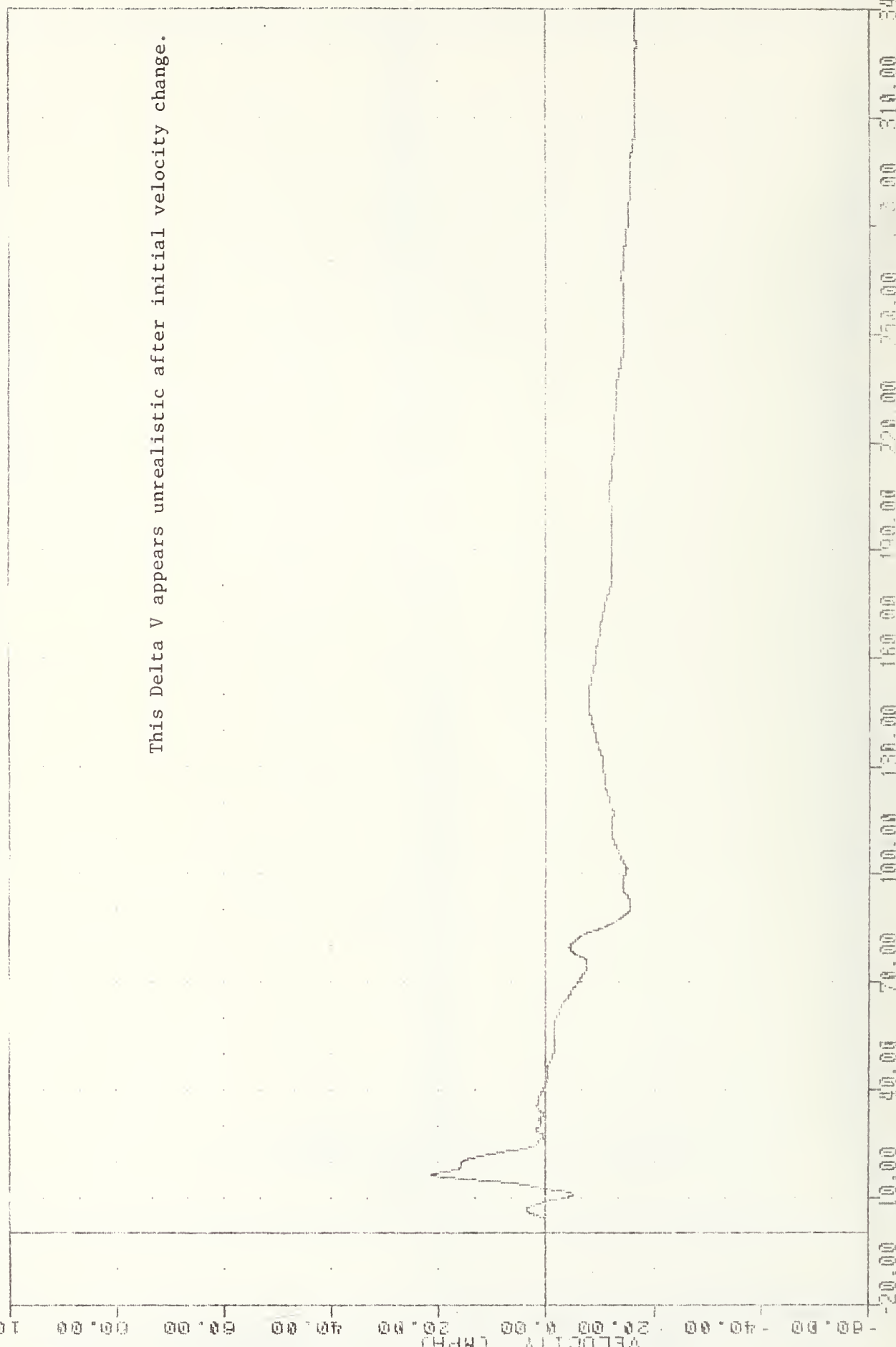
MOVING DEFORMABLE BAROTER INTO VOLKSWAGEN PASSAT
 VEHICLE LEFT FRONT CORNER POSITION AT ACCELERATION 7 H:15

TEST DATE 8-01-85 13:51.45

TEST NAME EVALUATION OF MOD VN FLEET

FILTER = BLFF 300/ 949/ 40
MIN. MAX VALUES = -16.510 329.75 21.55 16.13

83278000000
LFDY73



This Delta V appears unrealistic after initial velocity change.

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING IFDVG

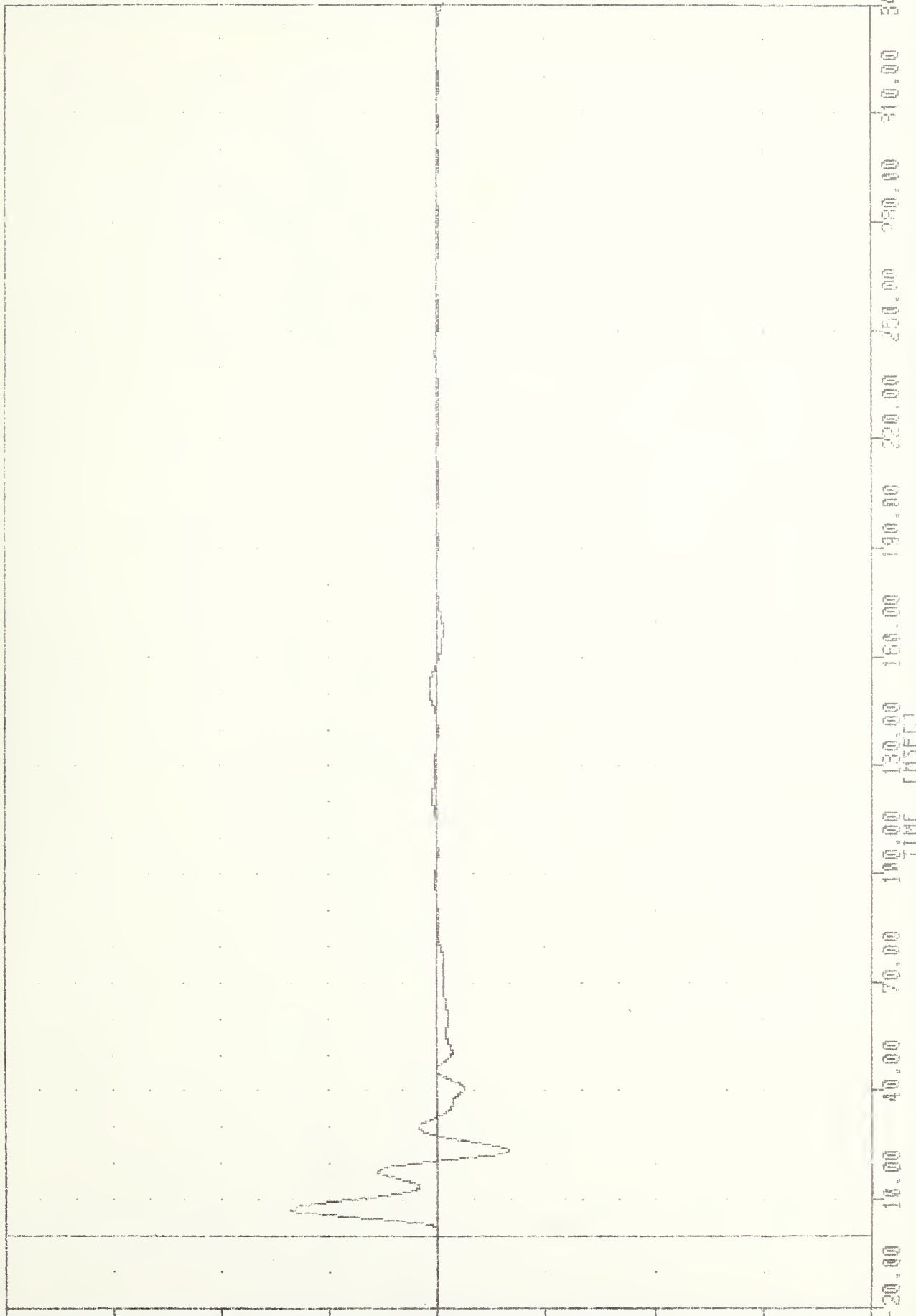
TRC 830930
EVALUATION OF 830 VW FLEET
832730000000
LF0Y64

PLOT DATE 4-OCT-83 10:45:20

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -64.97e 23.62e 136.48 e 7.25

ACCELERATION (G) (X10⁴)



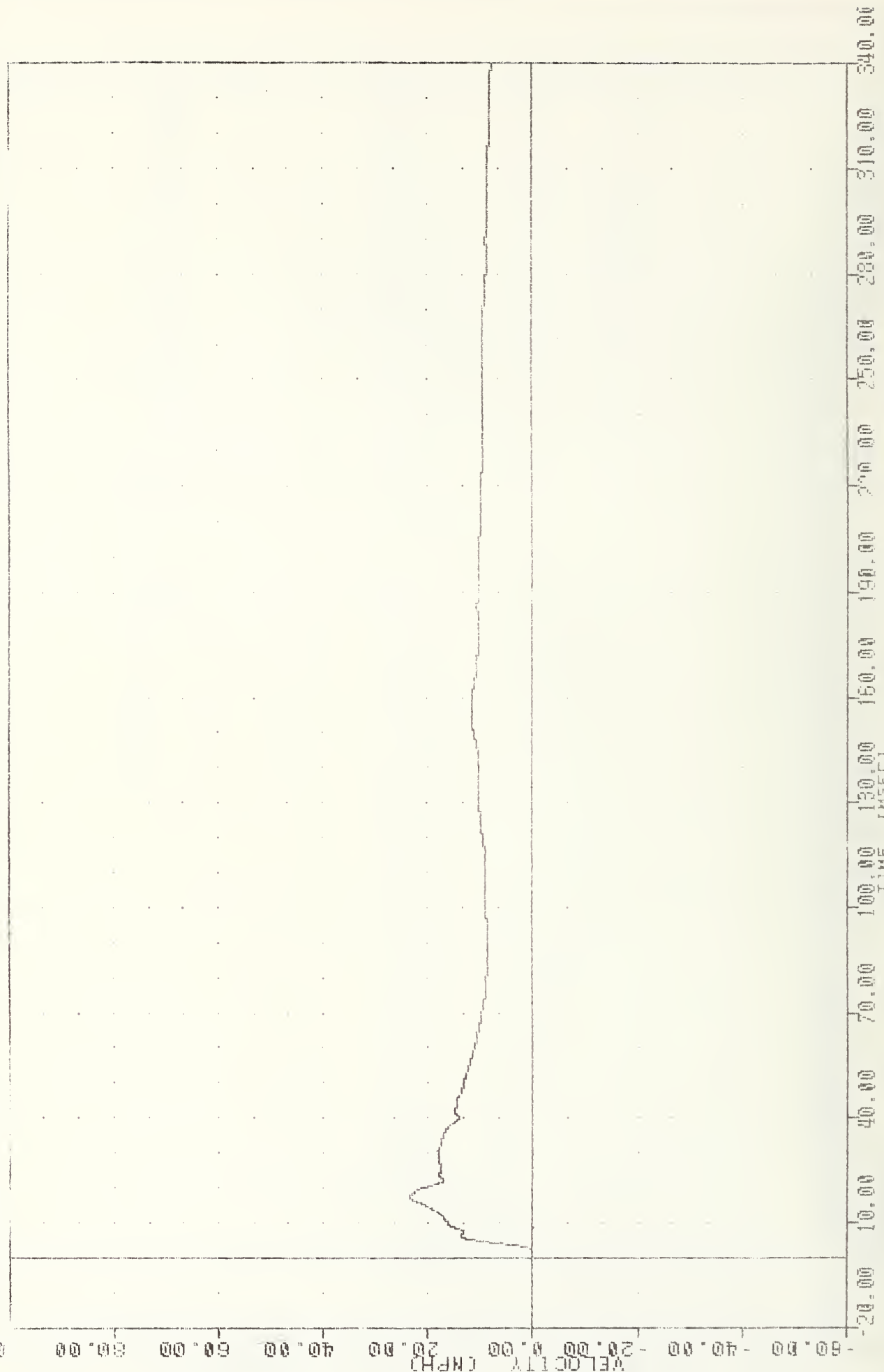
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

VEHICLE LEFT FRONT DOOR POSITION 101 ACCELERATION 1 AXIS

PLU DATE 4-ULT-83 13:51:45

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -0.029 -4.63 23.60 17.00

TRC
EVALUATION OF MOD VW FLEET
832730000000
LFDVW4



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA W USING LFDVW4

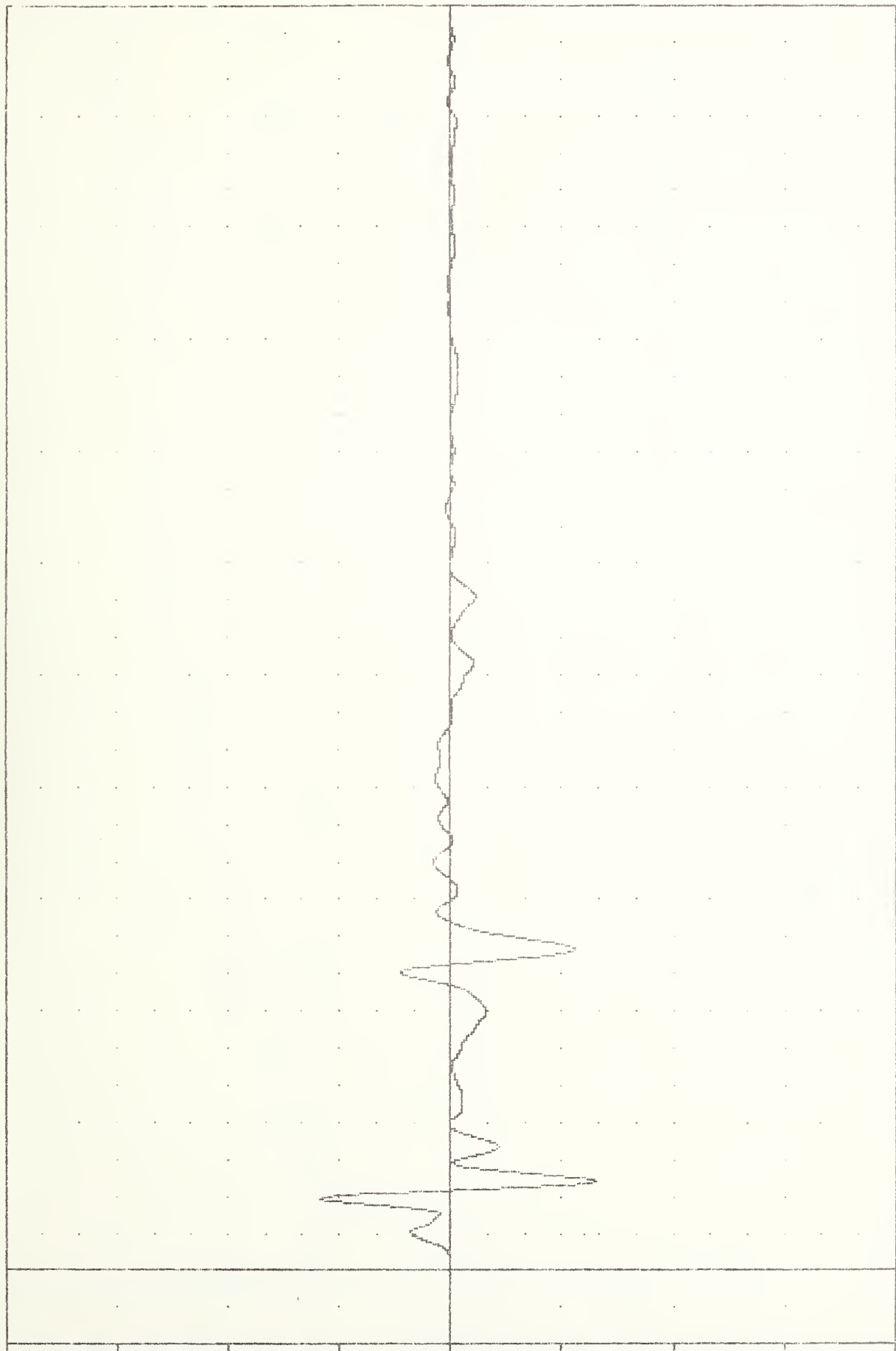
TAC
EVALUATION OF X00 VN FLEET
832730000000
LFDY65

PL01 DATE 4-JUL-83 10:46:20

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -129.92 24.00 116.24 19.25

ACCELERATION (G)
(X10⁴)



TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT FRONT DOOR (POSITION 11) ACCELERATION Y AXIS

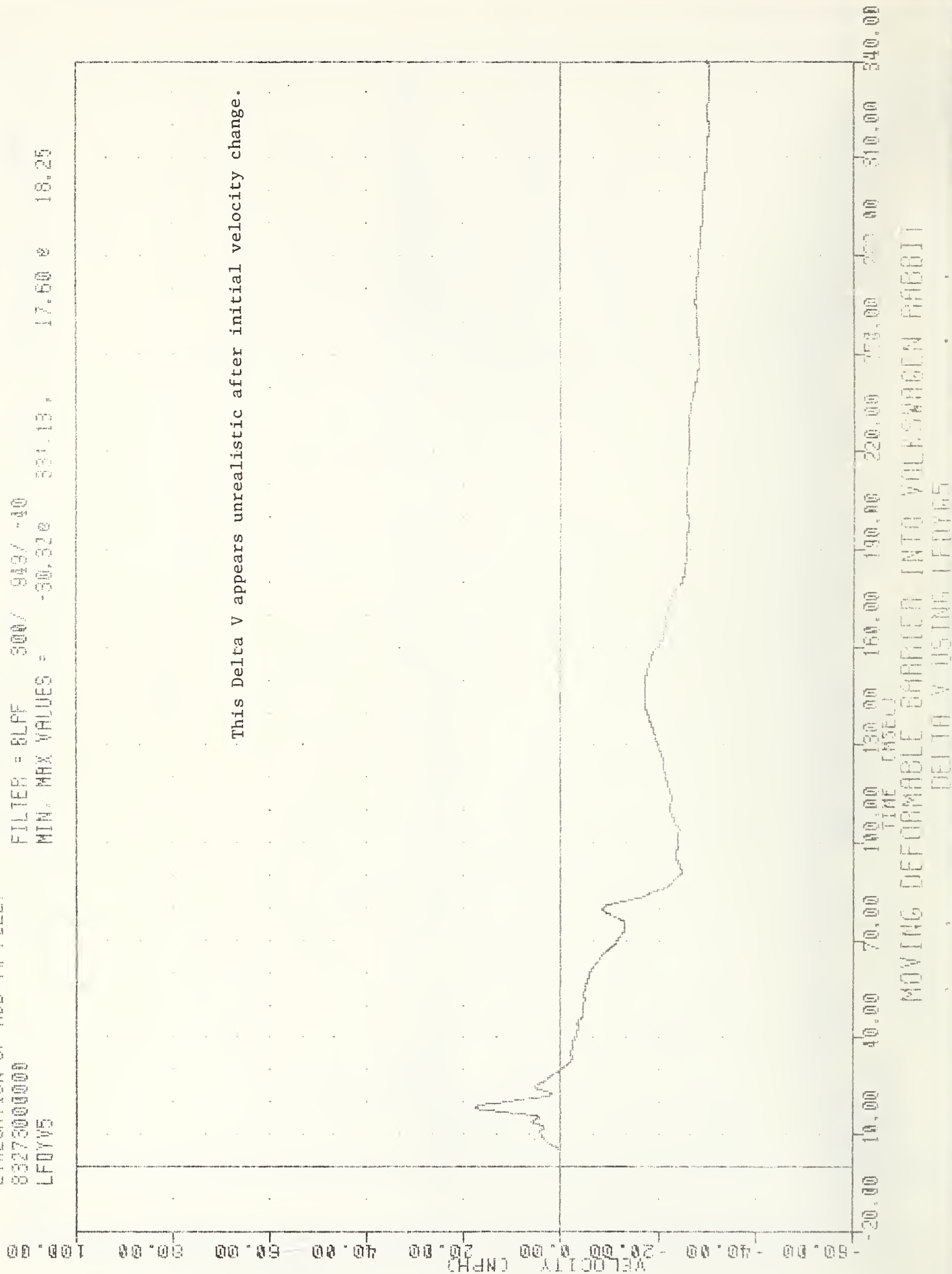
TRC
EVALUATION OF MDD VV FLEET
832730000000
LF0YV5

PLD1 DATE 4-ULF-80 13:01:45

FILTER = 8LFF 300/ 913/ -40

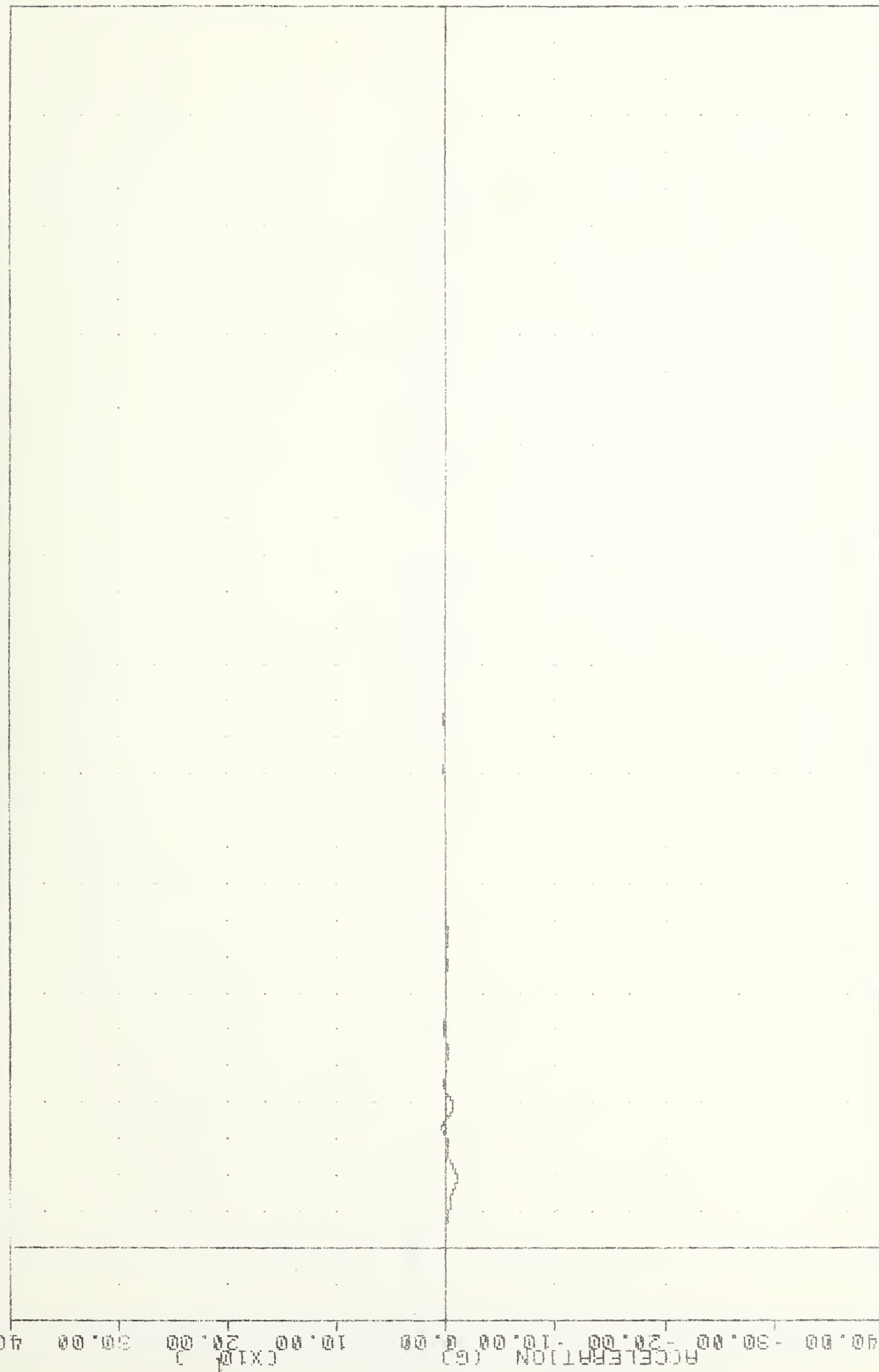
MIN. MAX VALUES = -30.320 331.13, 17.60 18.25

This Delta V appears unrealistic after initial velocity change.



TRC 830930
 EVALUATION OF MOD YW FLEET
 83273000000
 TFRX67

FLUI DATE 4-ULF-80 10:46:20
 FILTER = BLPF 100/ 315/ -40
 MIN. MAX VALUES = -10.042 19.00 4.23 33.00



-40.00
 -30.00
 -20.00
 -10.00
 0.00
 10.00
 20.00
 30.00
 40.00

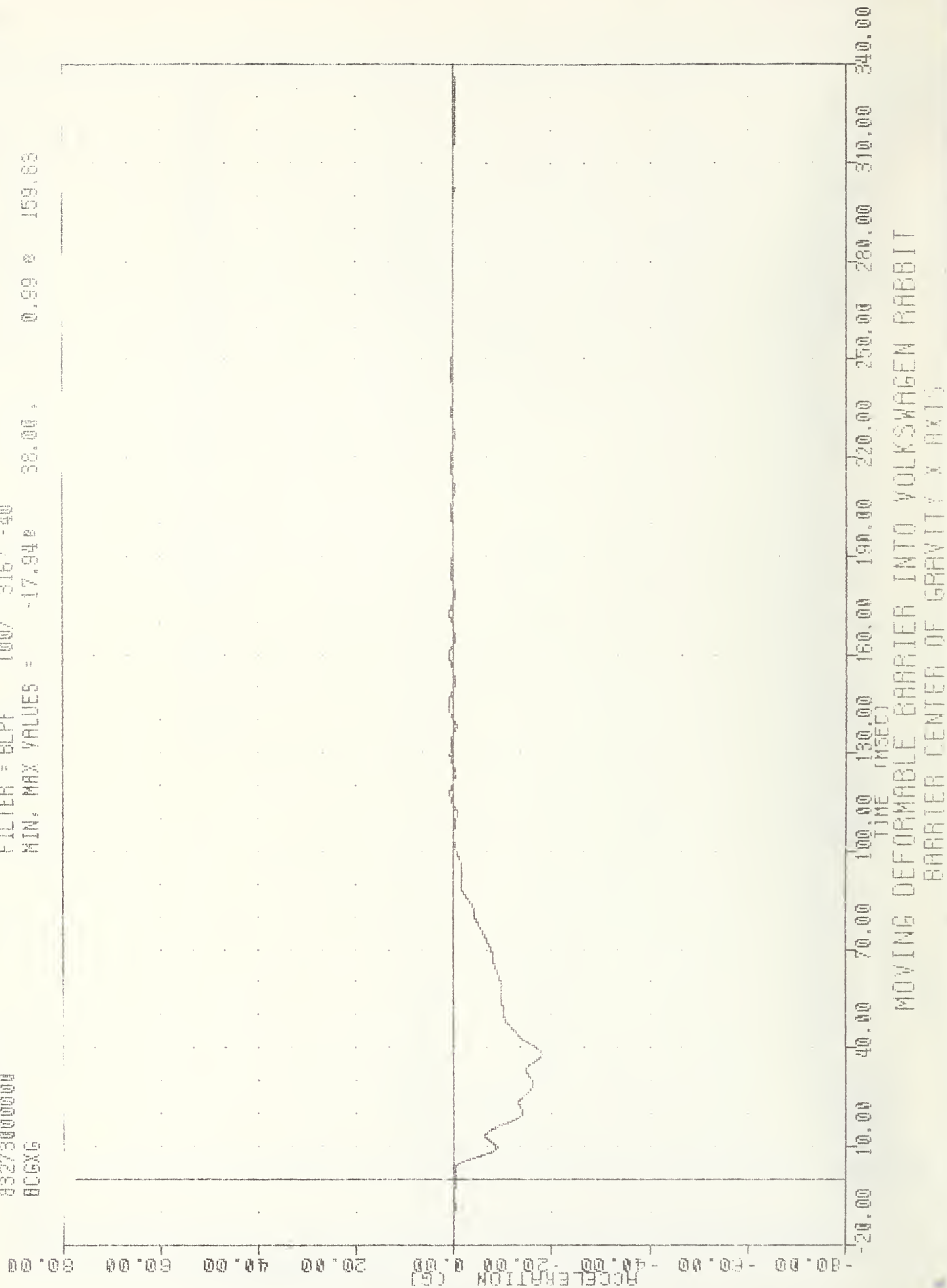
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE TRUNK FLOOR RIGHT ACCELERATION X AXIS

TRC 830930
 EVALUATION OF MOD VW FLEET
 83273000000
 BCGXG

PLU1 DATE 4-OUT-83 10:46:20

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -17.940 38.000 0.99 0 159.63

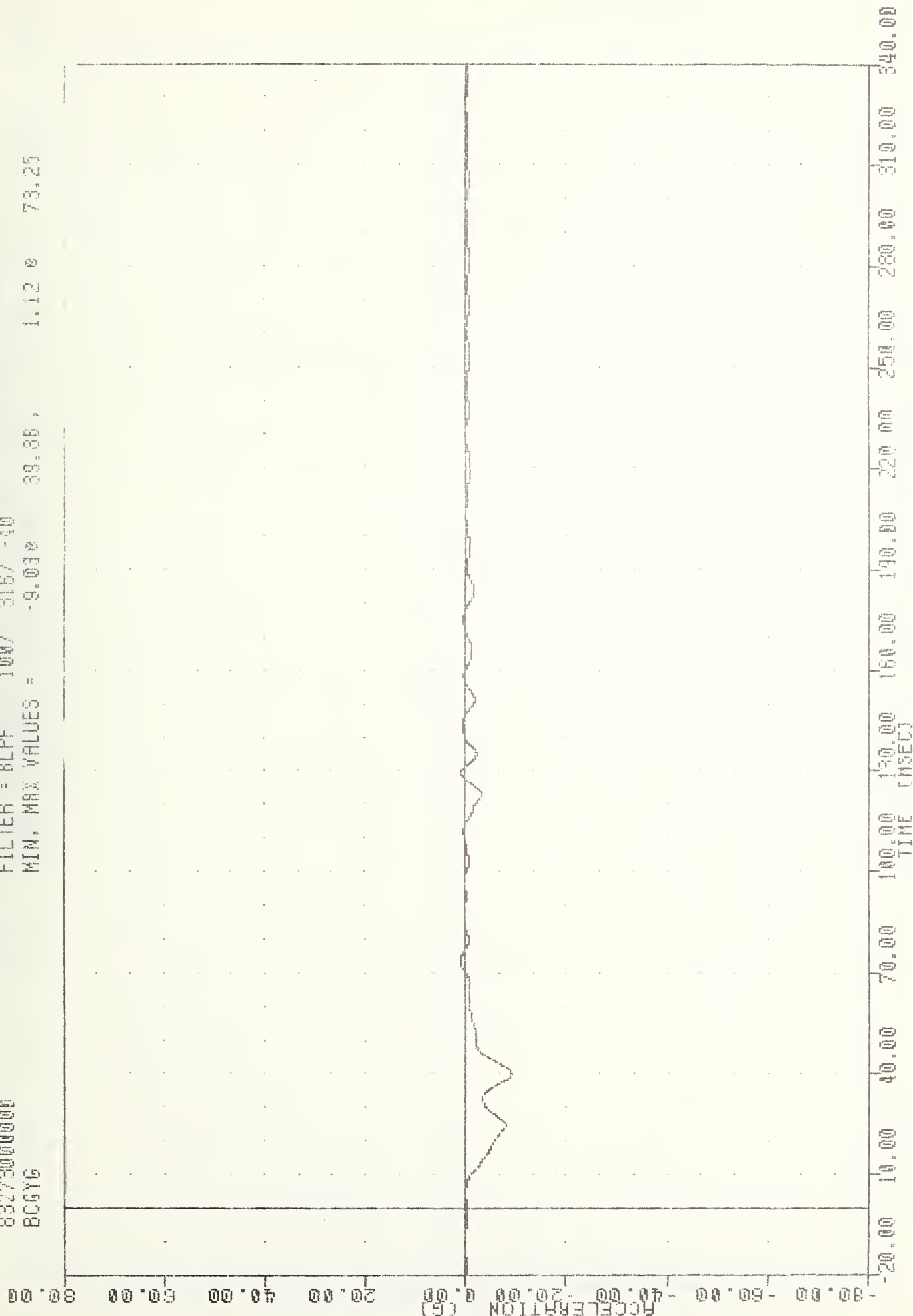


TRC 830930
 EVALUATION OF MOD VV FLEET
 832730000000
 BCGYG

PLOT DATE 4-00F-83 10:46:20

FILTER = BLPF 100/ 316/ -40

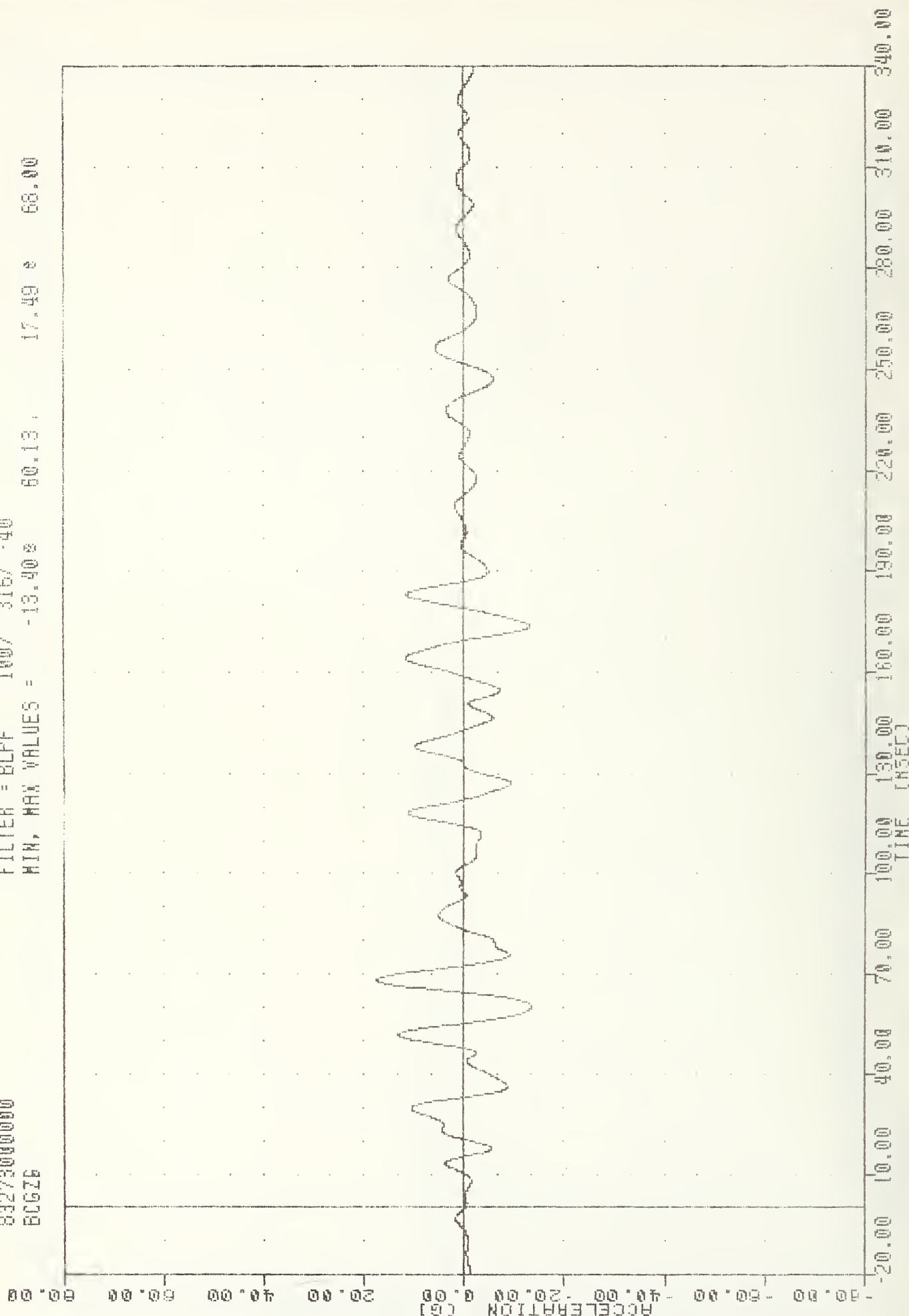
MIN. MAX VALUES = -9.032 33.88 1.12 73.25



TAC
EVALUATION OF H00 VW FLEET
832730000000
BCGZ6

PL01 DATE 4-JUL-83 10:44:20

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -13.402 60.13 17.49 68.00

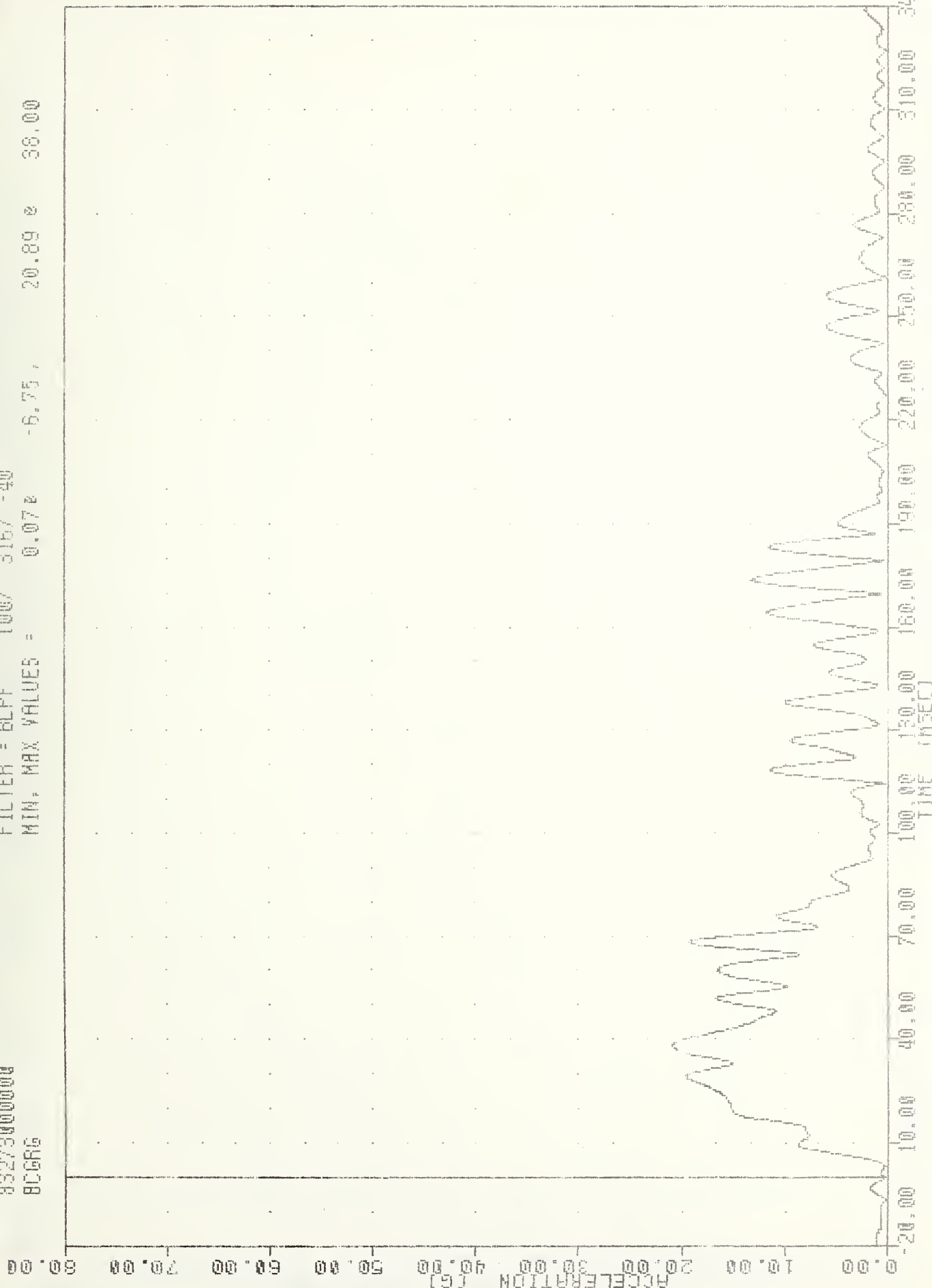


TRL
EVALUATION OF MOD VW FLEET
832730000000
BCGRG

PLOT DATE 4-JUL-83 10:46:20

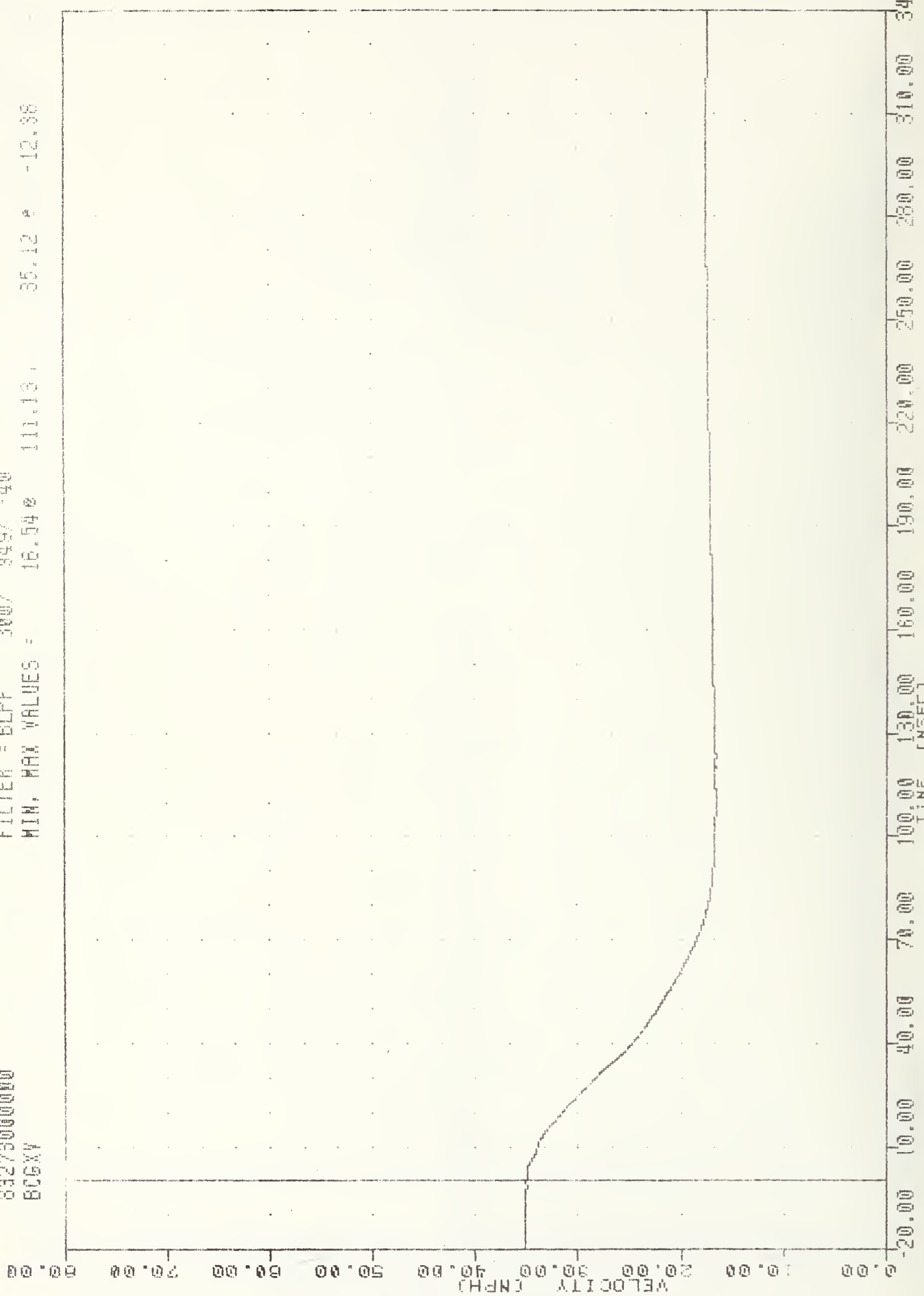
FILTER = BLPF 100/ 315/ -40

MIN. MAX VALUES = 0.072 -6.75, 20.89 2 38.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER CR RESULTANT

TAC 830930
 EVALUATION OF MOD VN FLEET
 832750000000
 BCGXV
 PLOT DATE 4-OCT-83 13:51:45
 FILTER = BLPF 300/ 849/ -40
 MIN, MAX VALUES = 16.540 111.13 35.12 -12.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BCGXG

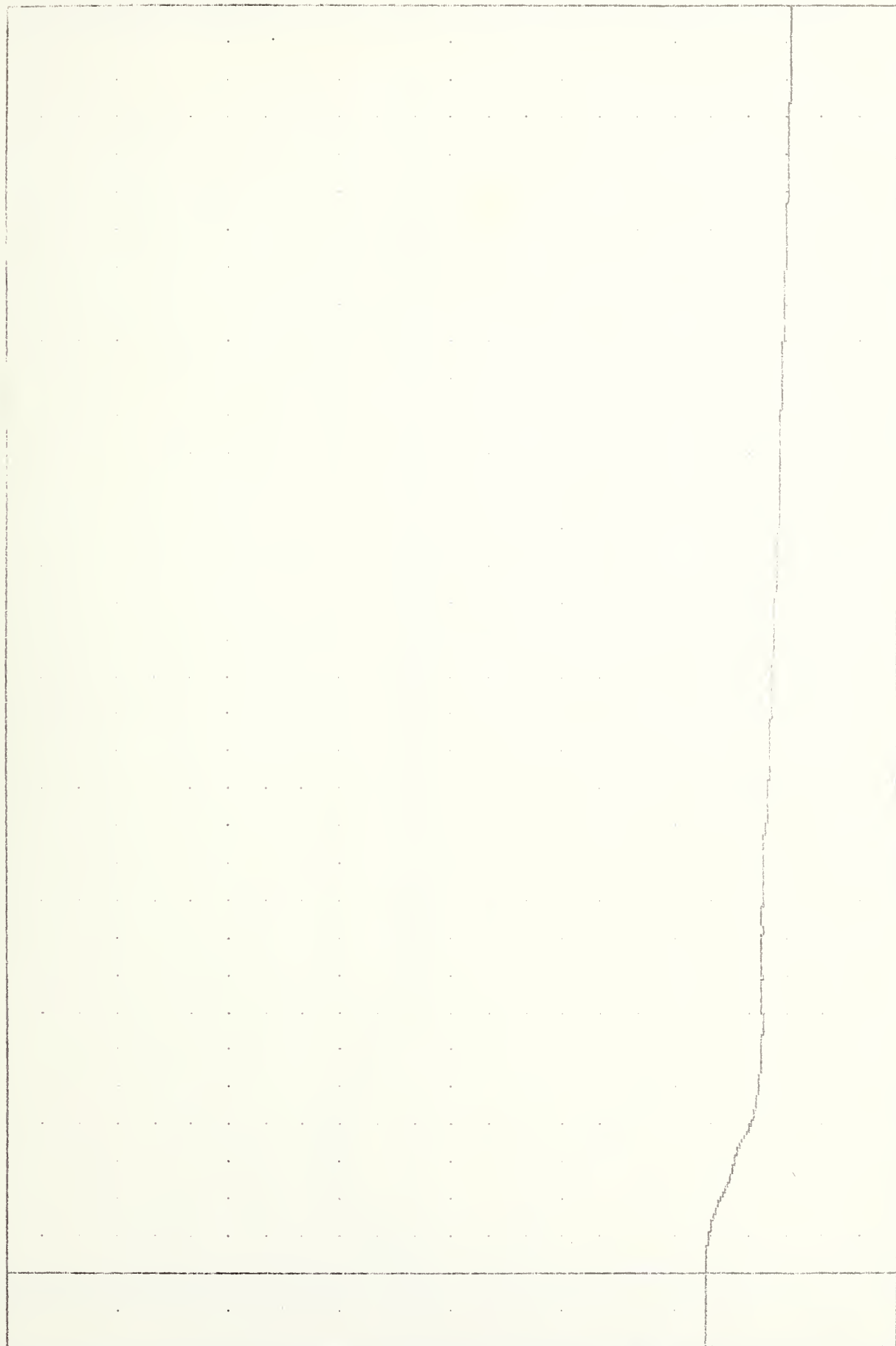
TRC 830930
 EVALUATION OF MOD VW FLEET
 03273000000
 BCGYV

PLOT DATE 4-ULT-83 13:51:45

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 9.43e 338.88, 17.12 e -9.53

80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

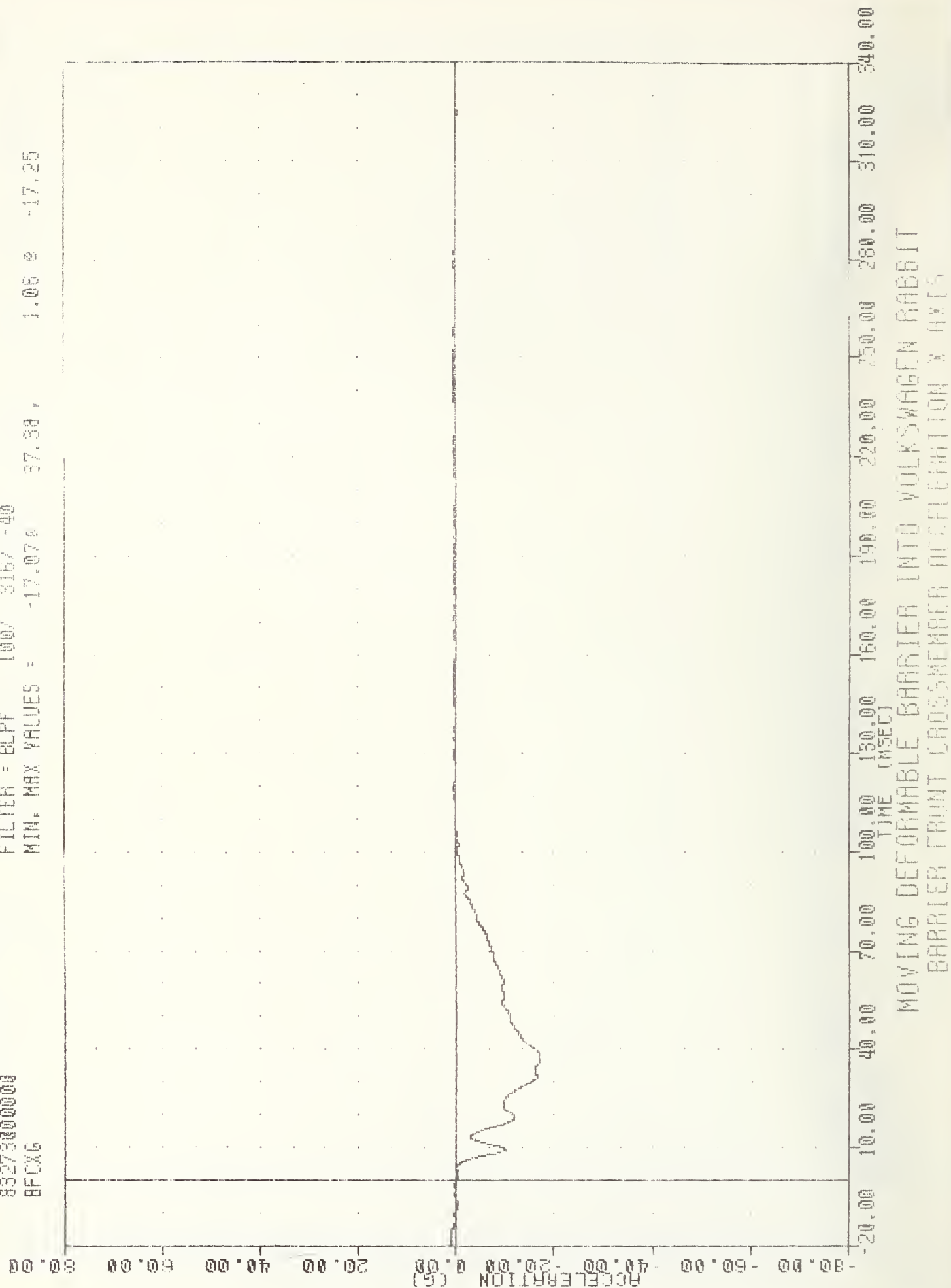
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

DEFORMABLE BARRIER

TRC
EVALUATION OF MOD YW FLEET
83273000000
BFCXG

PLOT DATE 4-OCT-83 10:46:20

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -17.07 97.38 1.06 2 -17.25



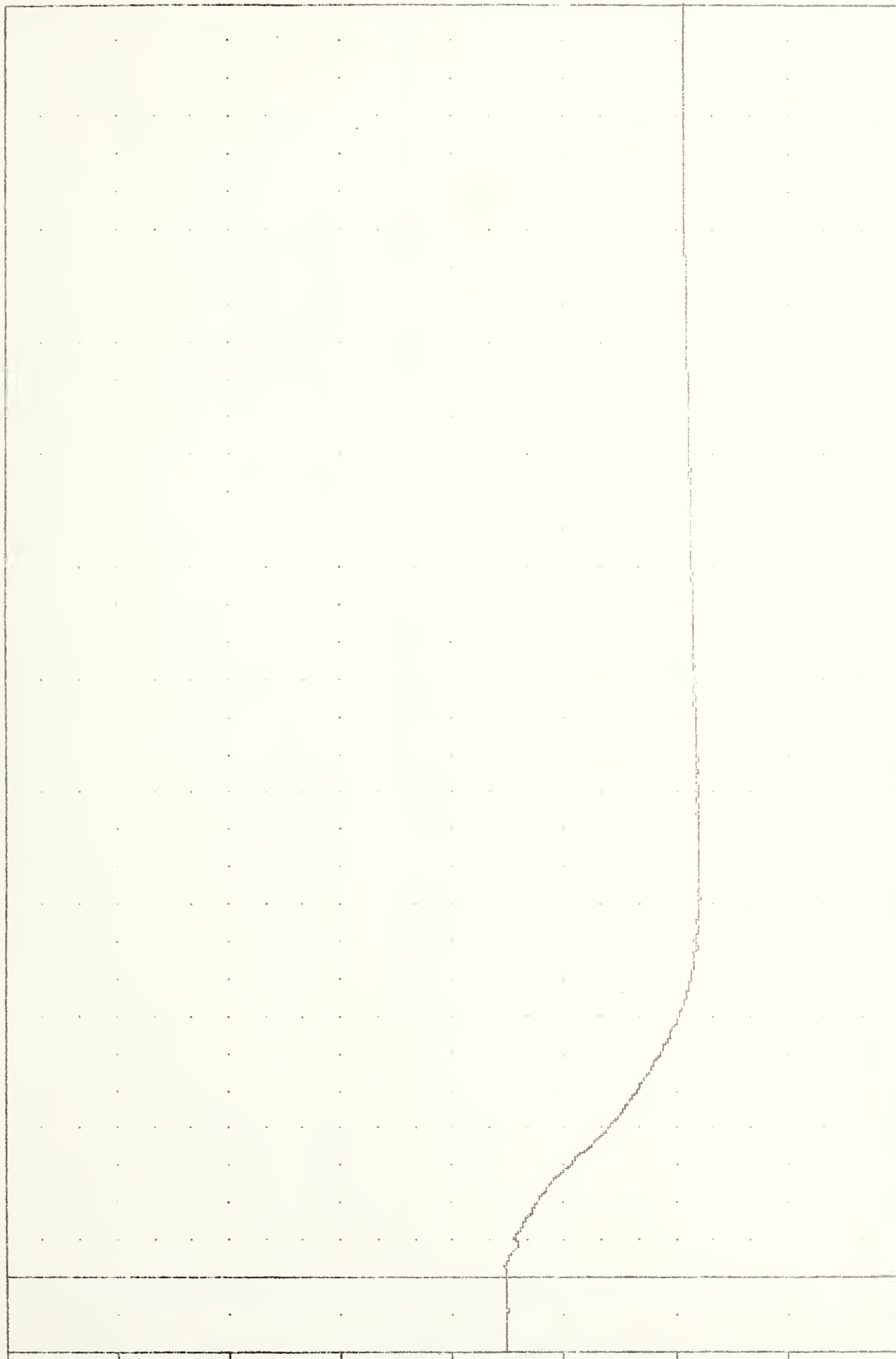
TRC 830930
EVALUATION OF MOD VW FLEET
832730000000
BFCXV

PLOT DATE 4-DEC-83 13:51:45

FILTER = BLFF 300/ 949/ -40

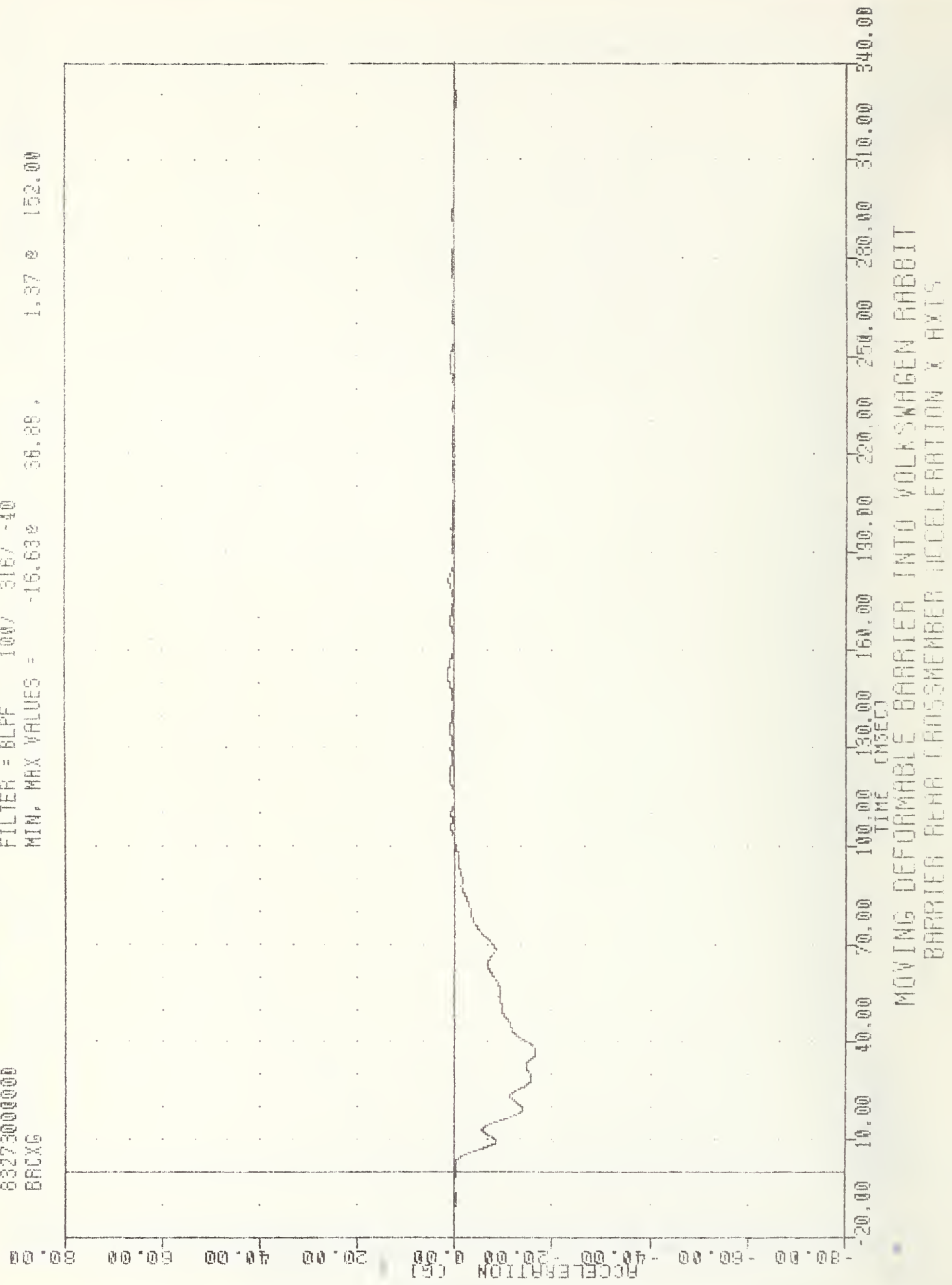
MIN. MAX VALUES = 17.878 101.50, 35.30 2.63

VELOCITY (MPH)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

TRC
 EVALUATION OF MOD VW FLEET
 83273000000
 BRXG
 PLOT DATE 8-01-85 10:46:20
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -16.63g 36.88, 1.37 g 152.00

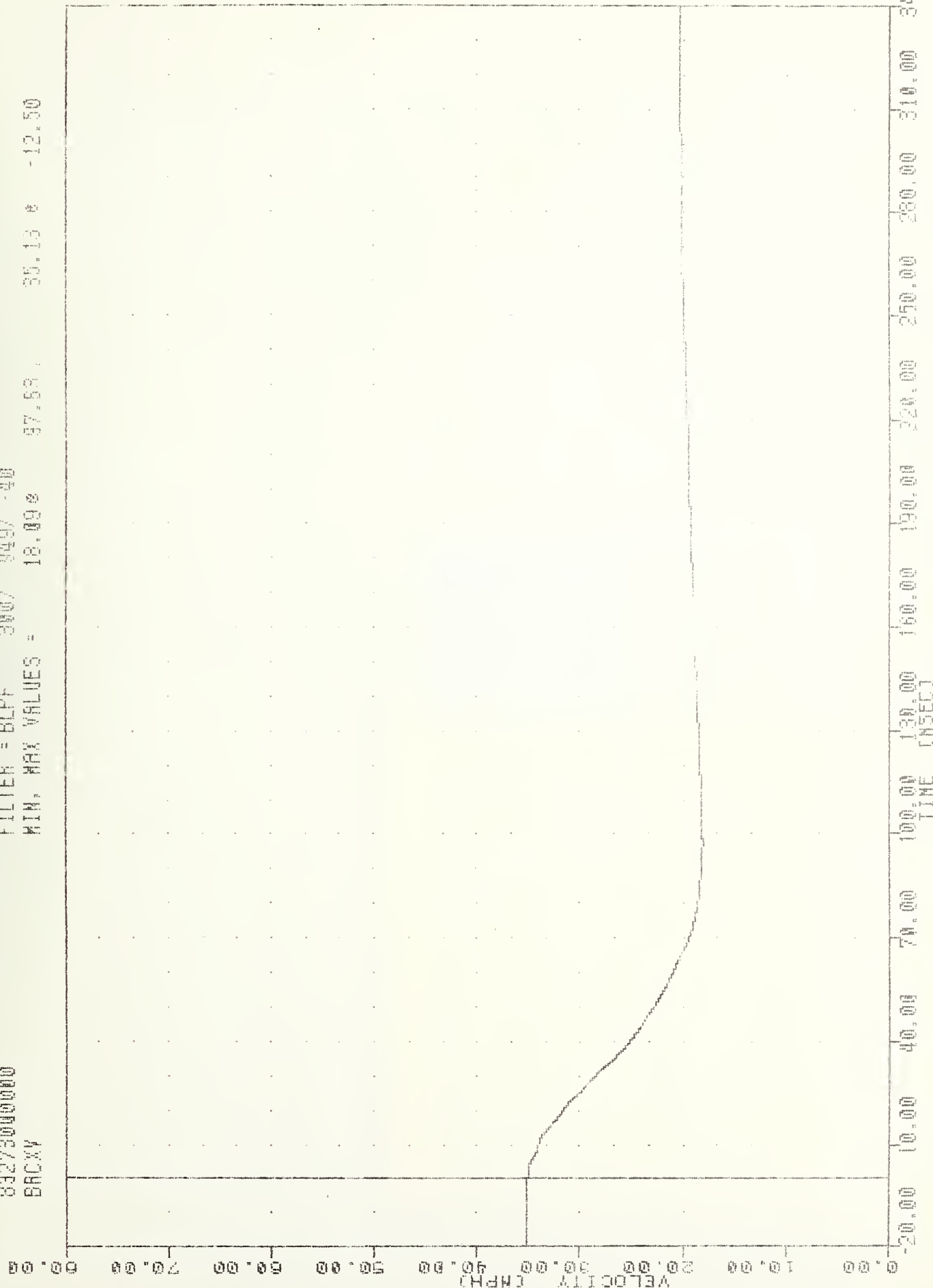


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 BARRIER REAR CROSSMEMBER ACCELERATION X AXIS

TAC 830930
 EVALUATION OF MOD VN FLEET
 832730000000
 BRCXY

PLOT DATE 4-JUL-80 13:51:45

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = 18.098 97.53 35.13 8 -12.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V TESTING PROC

TL 242 .S873

Stultz, J.

Evaluation o
Volkswagen

Form DOT F 172
FORMERLY FORM D

DOT LIBRARY



00092645